

**20MHz Band Width: Ch 20175, RB Size=100; RB Offset = 0**

**10.6.3 LTE Band 5**

Output power table

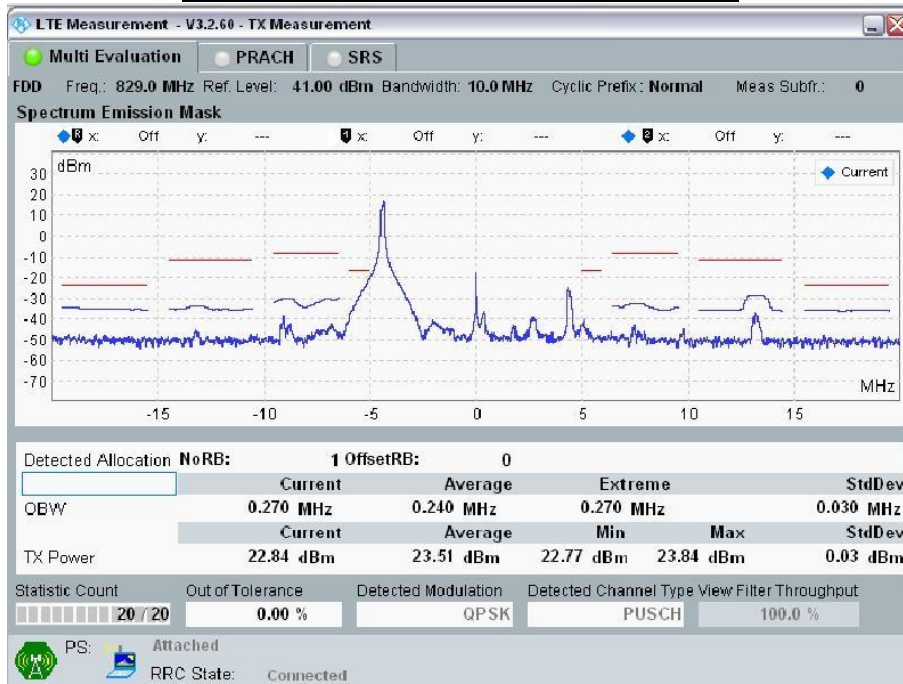
Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
5	10	20450	829.0	QPSK	1	0	0	23.5
					1	24	0	23.4
					1	49	0	23.3
					25	0	1	22.5
					25	12	1	22.5
					25	24	1	22.4
					50	0	1	22.6
		16QAM		1	0	1	22.5	
				1	24	1	22.5	
				1	49	1	22.4	
				25	0	2	21.6	
				25	12	2	21.6	
				25	24	2	21.3	
				50	0	2	21.5	
	20525	QPSK	836.5	1	0	0	23.4	
				1	24	0	23.3	
				1	49	0	23.1	
				25	0	1	22.5	
				25	12	1	22.4	
				25	24	1	22.2	
				50	0	1	22.5	
		16QAM	1	0	1	22.4		
			1	24	1	22.3		
			1	49	1	22.2		
			25	0	2	21.5		
			25	12	2	21.3		
			25	24	2	21.2		
50			0	2	21.1			
20600	QPSK	844.0	1	0	0	23.3		
			1	24	0	23.2		
			1	49	0	23.0		
			25	0	1	22.4		
			25	12	1	22.3		
			25	24	1	22.1		
			50	0	1	22.4		
	16QAM	1	0	1	22.3			
		1	24	1	22.3			
		1	49	1	22.1			
		25	0	2	21.3			
		25	12	2	21.3			
		25	24	2	21.1			
		50	0	2	21.1			

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
5	5	20425	826.5	QPSK	1	0	0	23.5
					1	12	0	23.4
					1	24	0	23.3
					12	0	1	22.5
					12	6	1	22.4
					12	11	1	22.3
				25	0	1	22.5	
				16QAM	1	0	1	22.5
					1	12	1	22.4
					1	24	1	22.3
					12	0	2	21.6
					12	6	2	21.5
		12	11		2	21.3		
		25	0	2	21.5			
		20525	836.5	QPSK	1	0	0	23.4
					1	12	0	23.3
					1	24	0	23.1
					12	0	1	22.5
					12	6	1	22.3
					12	11	1	22.2
				25	0	1	22.4	
				16QAM	1	0	1	22.4
					1	12	1	22.3
					1	24	1	22.2
					12	0	2	21.5
					12	6	2	21.3
		12	11		2	21.1		
		25	0	2	21.1			
		20625	846.5	QPSK	1	0	0	23.2
					1	12	0	23.2
1	24				0	23.0		
12	0				1	22.3		
12	6				1	22.2		
12	11				1	22.0		
25	0			1	22.3			
16QAM	1			0	1	22.3		
	1			12	1	22.2		
	1			24	1	22.0		
	12			0	2	21.3		
	12			6	2	21.2		
	12	11	2	21.0				
25	0	2	21.0					

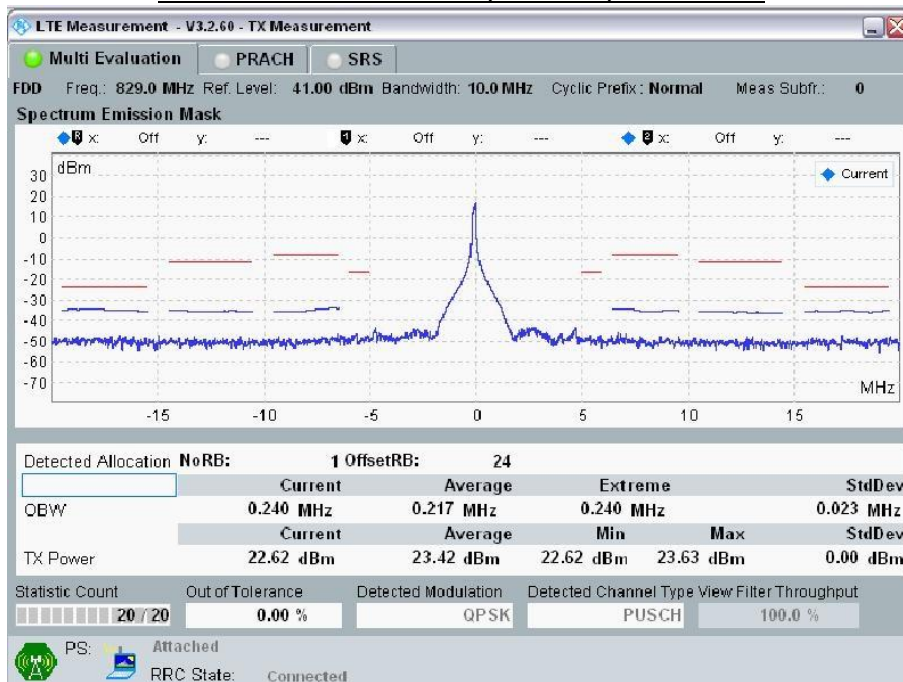
Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
5	3	20415	825.5	QPSK	1	0	0	23.4
					1	7	0	23.3
					1	14	0	23.3
					8	0	1	22.4
					8	4	1	22.4
					8	7	1	22.3
				15	0	1	22.5	
				16QAM	1	0	1	22.4
					1	7	1	22.4
					1	14	1	22.3
					8	0	2	21.5
					8	4	2	21.5
		8	7		2	21.3		
		20525	836.5	QPSK	1	0	0	23.4
					1	7	0	23.2
					1	14	0	23.1
					8	0	1	22.5
					8	4	1	22.3
					8	7	1	22.2
				15	0	1	22.4	
				16QAM	1	0	1	22.4
					1	7	1	22.3
					1	14	1	22.1
					8	0	2	21.4
					8	4	2	21.3
		8	7		2	21.1		
		20634	847.4	QPSK	1	0	0	23.2
					1	7	0	23.2
					1	14	0	23.0
					8	0	1	22.3
					8	4	1	22.2
					8	7	1	22.0
				15	0	1	22.3	
				16QAM	1	0	1	22.3
					1	7	1	22.2
					1	14	1	22.0
8	0				2	21.3		
8	4				2	21.2		
8	7	2	21.0					
15	0	2	21.0					

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
5	1.4	20407	824.7	QPSK	1	0	0	23.4
					1	2	0	23.3
					1	5	0	23.2
					3	0	1	22.4
					3	1	1	22.4
					3	2	1	22.3
				6	0	1	22.5	
				16QAM	1	0	1	22.4
					1	2	1	22.4
					1	5	1	22.3
					3	0	2	21.5
					3	1	2	21.5
		3	2		2	21.2		
		20525	836.5	QPSK	1	0	0	23.3
					1	2	0	23.2
					1	5	0	23.0
					3	0	1	22.4
					3	1	1	22.3
					3	2	1	22.1
				6	0	1	22.4	
				16QAM	1	0	1	22.4
					1	2	1	22.3
					1	5	1	22.1
					3	0	2	21.4
					3	1	2	21.2
		3	2		2	21.1		
		20642	848.2	QPSK	1	0	0	23.2
					1	2	0	23.1
					1	5	0	22.9
					3	0	1	22.3
					3	1	1	22.1
					3	2	1	22.0
				6	0	1	22.2	
				16QAM	1	0	1	22.2
					1	2	1	22.2
					1	5	1	22.0
3	0				2	21.2		
3	1				2	21.1		
3	2	2	21.0					
6	0	2	21.0					

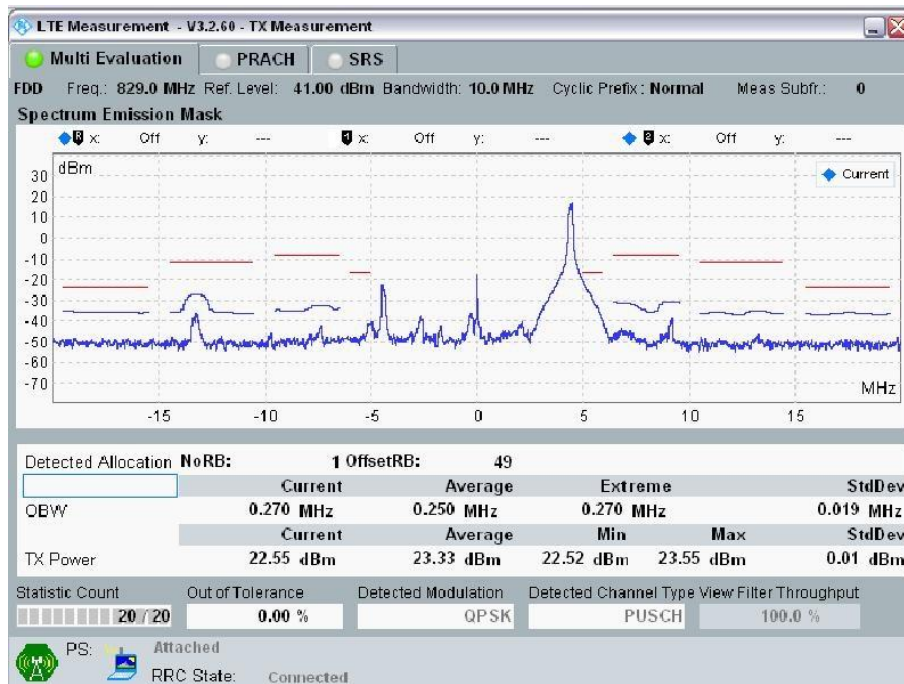
**Spectrum Plots for the Test RB allocations**



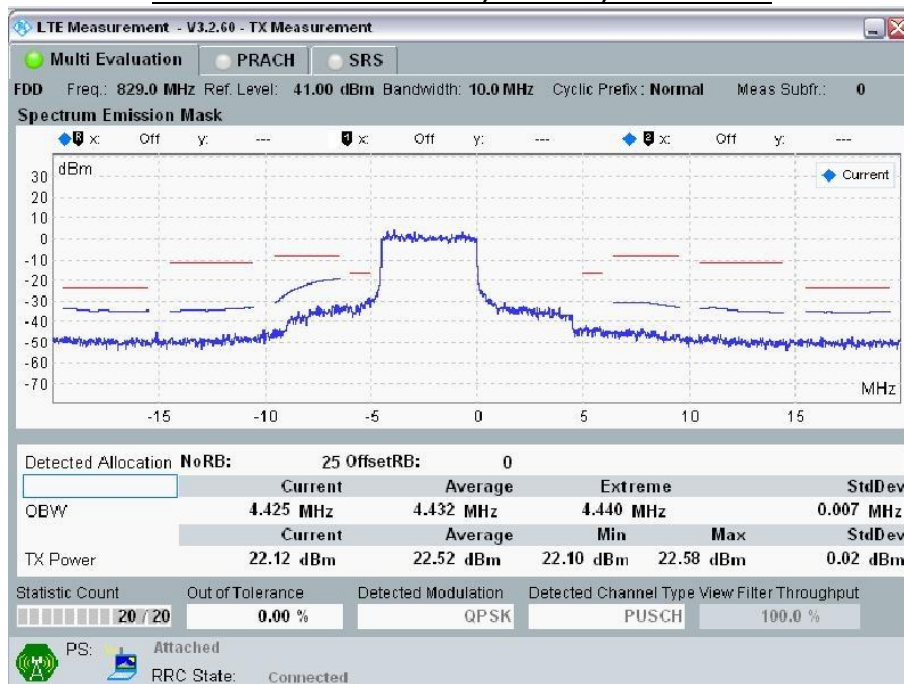
**10MHz Band Width: Ch 20450, RB Size=1; RB Offset = 0**



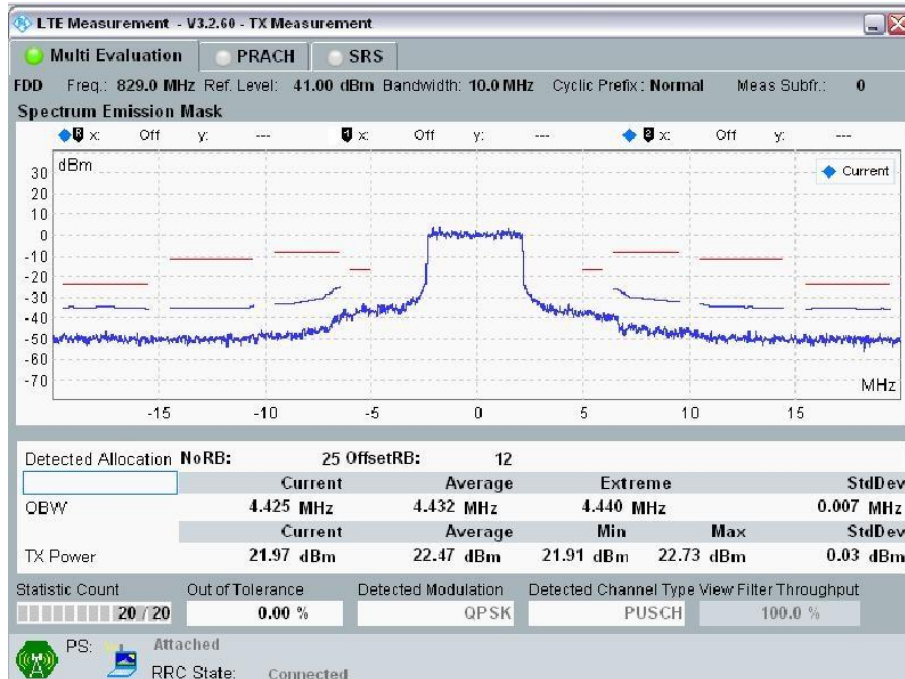
**10MHz Band Width: Ch 20450, RB Size=1; RB Offset = 24**



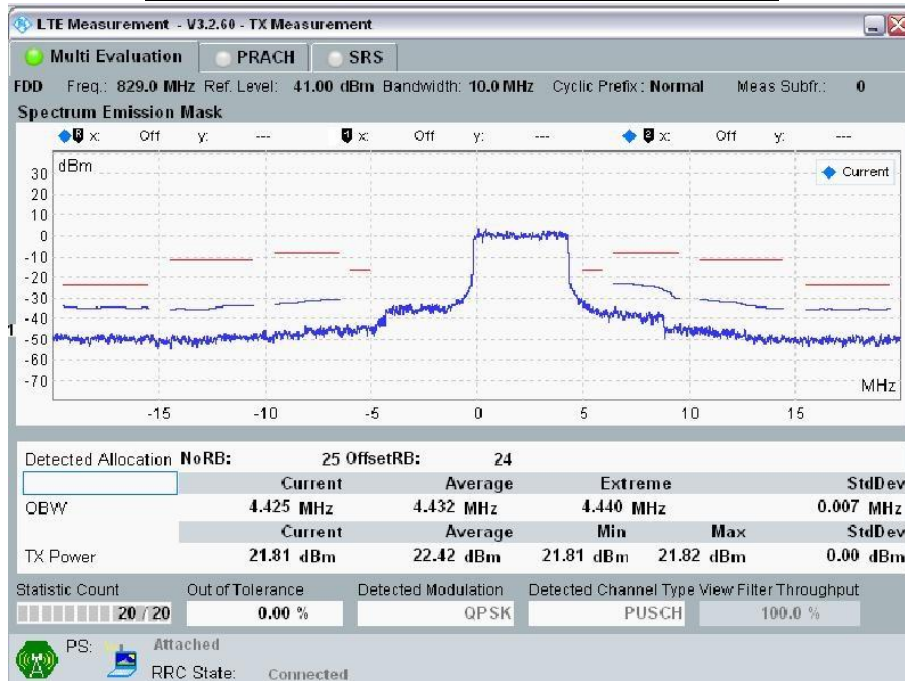
**10MHz Band Width: Ch 20450, RB Size=1; RB Offset = 49**



**10MHz Band Width: Ch 20450, RB Size=25; RB Offset = 0**

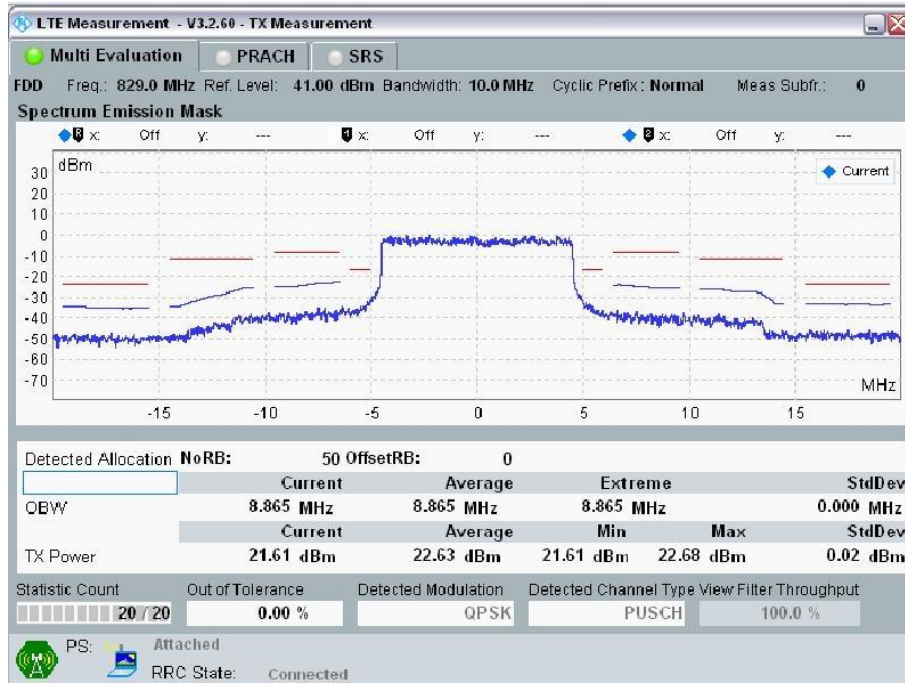


**10MHz Band Width: Ch 20450, RB Size=25; RB Offset = 12**



**10MHz Band Width: Ch 20450, RB Size=25; RB Offset = 24**





**10MHz Band Width: Ch 20450, RB Size=50; RB Offset = 0**

10.6.4 LTE Band 7

Output power table

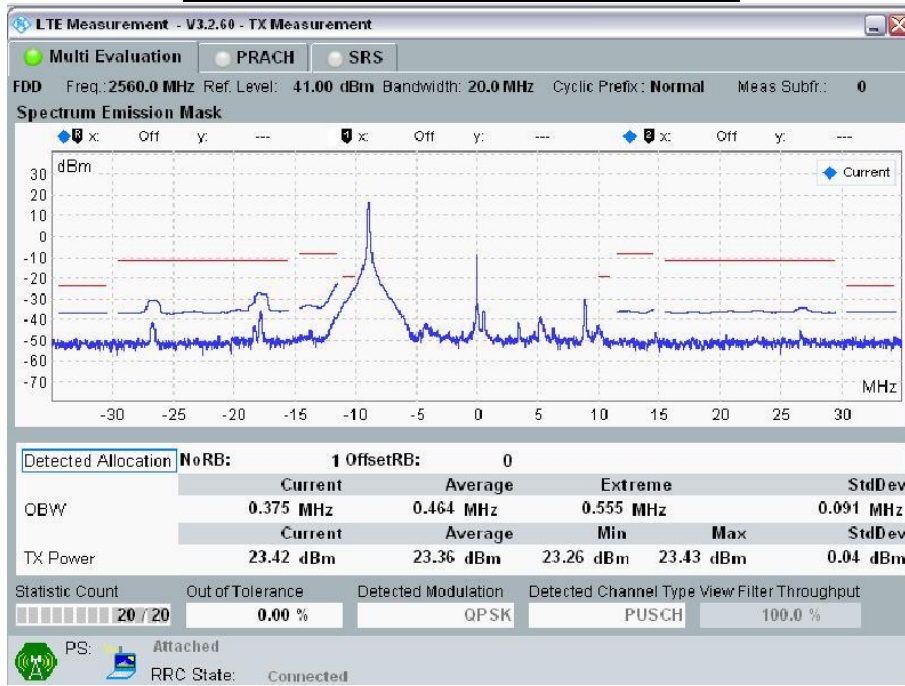
Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	
								W/o Power back-off	W/ Power back-off
7	20	20850	2510.0	QPSK	1	0	0	23.1	19.9
					1	49	0	22.5	19.7
					1	99	0	22.3	19.6
					50	0	1	22.1	19.0
					50	24	1	21.6	18.7
					50	49	1	21.4	18.8
					100	0	1	22.1	19.0
				16QAM	1	0	1	22.1	18.9
					1	49	1	21.5	18.8
					1	99	1	21.4	18.6
					50	0	2	21.2	18.0
					50	24	2	20.5	17.9
					50	49	2	20.4	17.7
					100	0	2	20.3	17.7
		21100	2535.0	QPSK	1	0	0	23.1	19.7
					1	49	0	22.4	19.5
					1	99	0	22.4	19.5
					50	0	1	22.1	18.8
					50	24	1	21.5	18.5
					50	49	1	21.5	18.6
					100	0	1	22.1	18.7
				16QAM	1	0	1	22.1	18.8
					1	49	1	21.5	18.6
					1	99	1	21.5	18.5
					50	0	2	21.1	17.9
					50	24	2	20.5	17.7
					50	49	2	20.4	17.5
100	0				2	20.4	17.6		
21350	2560.0	QPSK	1	0	0	23.4	20.0		
			1	49	0	22.6	19.8		
			1	99	0	22.5	19.8		
			50	0	1	22.4	19.0		
			50	24	1	21.7	18.9		
			50	49	1	21.7	18.8		
			100	0	1	22.5	19.0		
		16QAM	1	0	1	22.4	19.0		
			1	49	1	21.7	18.8		
			1	99	1	21.5	18.9		
			50	0	2	21.4	18.2		
			50	24	2	20.7	18.0		
			50	49	2	20.6	18.0		
			100	0	2	20.5	17.9		

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	
								W/o Power back-off	W/ Power back-off
7	15	20825	2507.5	QPSK	1	0	0	23.1	19.9
					1	37	0	22.5	19.7
					1	74	0	22.3	19.6
					36	0	1	22.1	19.0
					36	18	1	21.6	18.7
					36	35	1	21.4	18.8
				75	0	1	22.1	19.0	
				16QAM	1	0	1	22.1	18.9
					1	37	1	21.5	18.8
					1	74	1	21.4	18.6
					36	0	2	21.2	18.0
					36	18	2	20.5	17.9
		36	35		2	20.4	17.7		
		21100	2535.0	QPSK	1	0	0	23.0	19.6
					1	37	0	22.3	19.4
					1	74	0	22.3	19.4
					36	0	1	22.0	18.7
					36	18	1	21.4	18.4
					36	35	1	21.4	18.5
				75	0	1	22.0	18.6	
				16QAM	1	0	1	22.0	18.7
					1	37	1	21.4	18.5
					1	74	1	21.4	18.4
					36	0	2	21.0	17.8
					36	18	2	20.4	17.6
		36	35		2	20.4	17.4		
		21375	2562.5	QPSK	1	0	0	23.3	19.9
					1	37	0	22.5	19.7
					1	74	0	22.4	19.7
					36	0	1	22.3	18.9
36	18				1	21.6	18.8		
36	35				1	21.6	18.7		
75	0			1	22.4	18.9			
16QAM	1			0	1	22.3	18.9		
	1			37	1	21.6	18.7		
	1			74	1	21.4	18.8		
	36			0	2	21.3	18.1		
	36			18	2	20.6	17.9		
	36	35	2	20.5	17.9				
75	0	2	20.4	17.8					

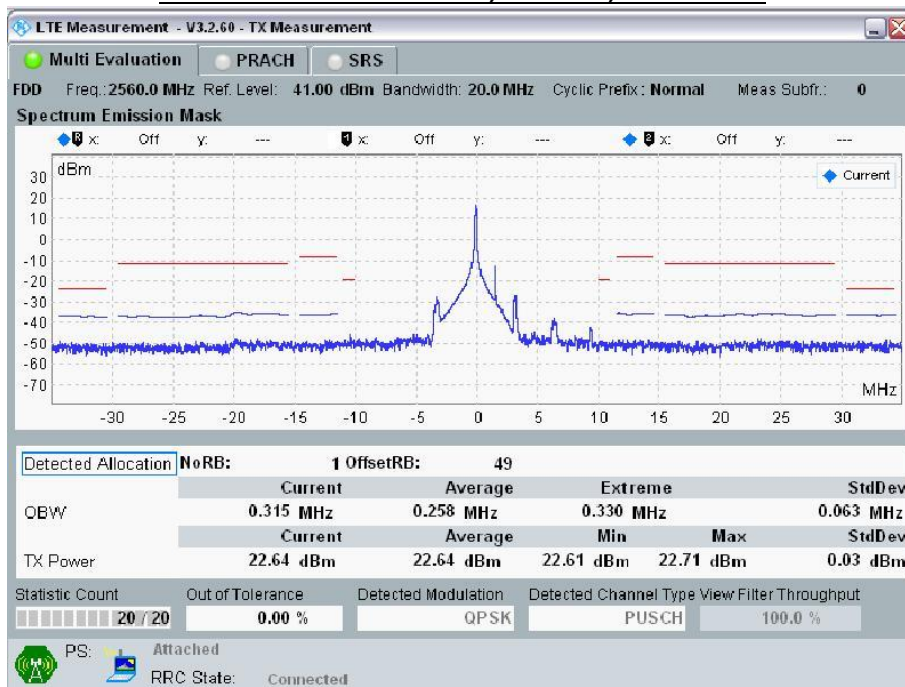
Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)		
								W/o Power back-off	W/ Power back-off	
7	10	20800	2505.0	QPSK	1	0	0	23.1	19.9	
					1	24	0	22.5	19.7	
					1	49	0	22.3	19.6	
					25	0	1	22.1	19.0	
					25	12	1	21.6	18.7	
					25	24	1	21.4	18.8	
				50	0	1	22.1	19.0		
				16QAM	1	0	1	22.1	18.9	
					1	24	1	21.5	18.8	
					1	49	1	21.4	18.6	
					25	0	2	21.2	18.0	
					25	12	2	20.5	17.9	
		25	24		2	20.4	17.7			
		21100	2535.0	QPSK	2565.0	1	0	0	23.0	19.6
						1	24	0	22.3	19.4
						1	49	0	22.3	19.4
						25	0	1	22.0	18.7
						25	12	1	21.4	18.4
						25	24	1	21.4	18.5
				50	0	1	22.0	18.6		
				16QAM	1	0	1	22.0	18.7	
					1	24	1	21.4	18.5	
					1	49	1	21.4	18.4	
					25	0	2	21.0	17.8	
					25	12	2	20.4	17.6	
		25	24		2	20.4	17.4			
		21400	2565.0	QPSK	2565.0	1	0	0	23.3	19.9
						1	24	0	22.5	19.7
						1	49	0	22.4	19.7
						25	0	1	22.3	18.9
25	12					1	21.6	18.8		
25	24					1	21.6	18.7		
50	0			1	22.4	18.9				
16QAM	1			0	1	22.3	18.9			
	1			24	1	21.6	18.7			
	1			49	1	21.4	18.8			
	25			0	2	21.3	18.1			
	25			12	2	20.6	17.9			
	25	24	2	20.5	17.9					
50	0	2	20.4	17.8						

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	
								W/o Power back-off	W/ Power back-off
7	5	20775	2502.5	QPSK	1	0	0	23.0	19.8
					1	12	0	22.4	19.6
					1	24	0	22.2	19.5
					12	0	1	22.0	18.9
					12	6	1	21.5	18.6
					12	11	1	21.3	18.7
					25	0	1	22.0	18.9
				16QAM	1	0	1	22.0	18.8
					1	12	1	21.4	18.7
					1	24	1	21.3	18.5
					12	0	2	21.1	17.9
					12	6	2	20.4	17.8
					12	11	2	20.3	17.6
					25	0	2	20.2	17.6
		21100	2535.0	QPSK	1	0	0	23.0	19.6
					1	12	0	22.3	19.4
					1	24	0	22.3	19.4
					12	0	1	22.0	18.7
					12	6	1	21.4	18.4
					12	11	1	21.4	18.5
					25	0	1	22.0	18.6
				16QAM	1	0	1	22.0	18.7
					1	12	1	21.4	18.5
					1	24	1	21.4	18.4
					12	0	2	21.0	17.8
					12	6	2	20.4	17.6
					12	11	2	20.3	17.4
					25	0	2	20.3	17.5
		21425	2567.5	QPSK	1	0	0	23.3	19.9
					1	12	0	22.5	19.7
1	24				0	22.4	19.7		
12	0				1	22.3	18.9		
12	6				1	21.6	18.8		
12	11				1	21.6	18.7		
25	0				1	22.4	18.9		
16QAM	1			0	1	22.3	18.9		
	1			12	1	21.6	18.7		
	1			24	1	21.4	18.8		
	12			0	2	21.3	18.1		
	12			6	2	20.6	17.9		
	12			11	2	20.5	17.9		
	25			0	2	20.4	17.8		

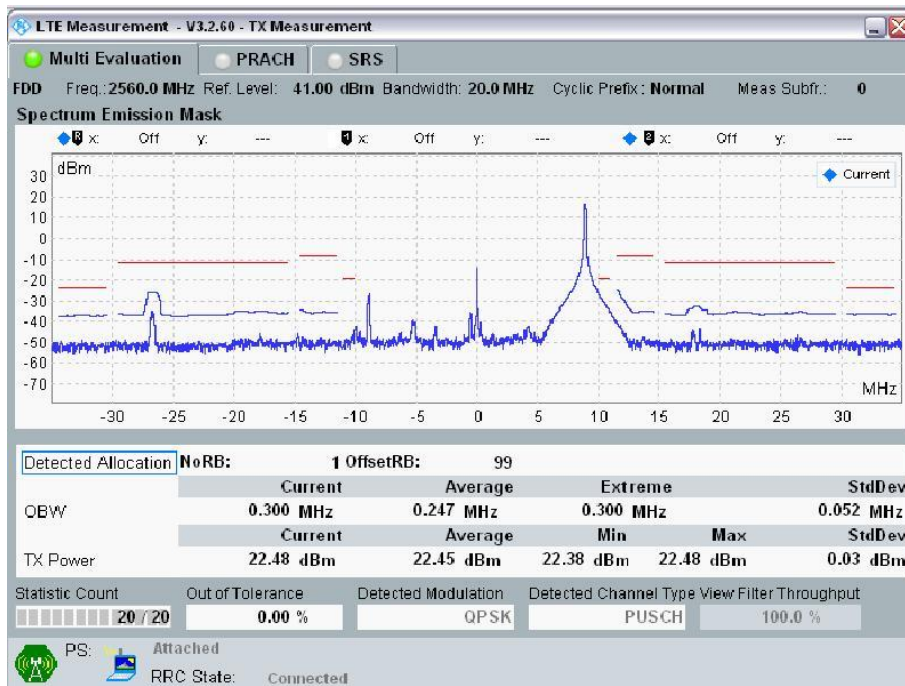
**Spectrum Plots for the Test RB allocations**



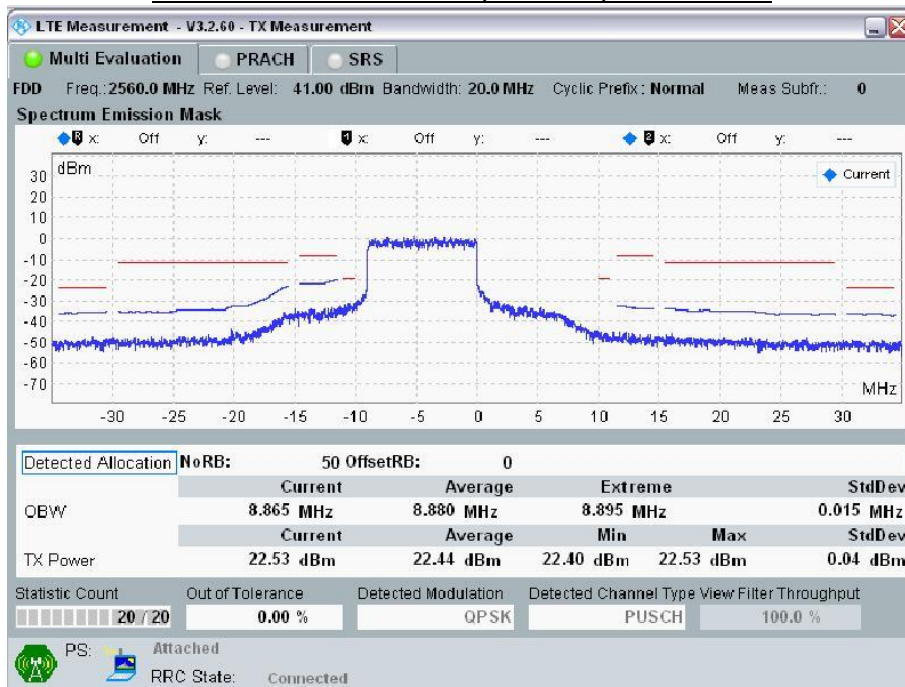
**20MHz Band Width: Ch 21350, RB Size=1; RB Offset = 0**



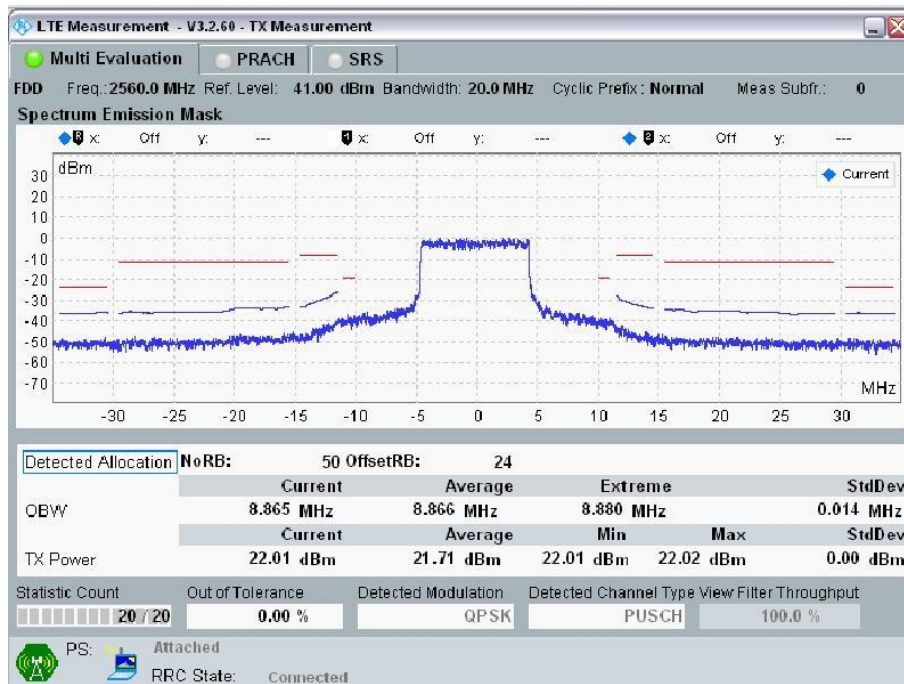
**20MHz Band Width: Ch 21350, RB Size=1; RB Offset = 49**



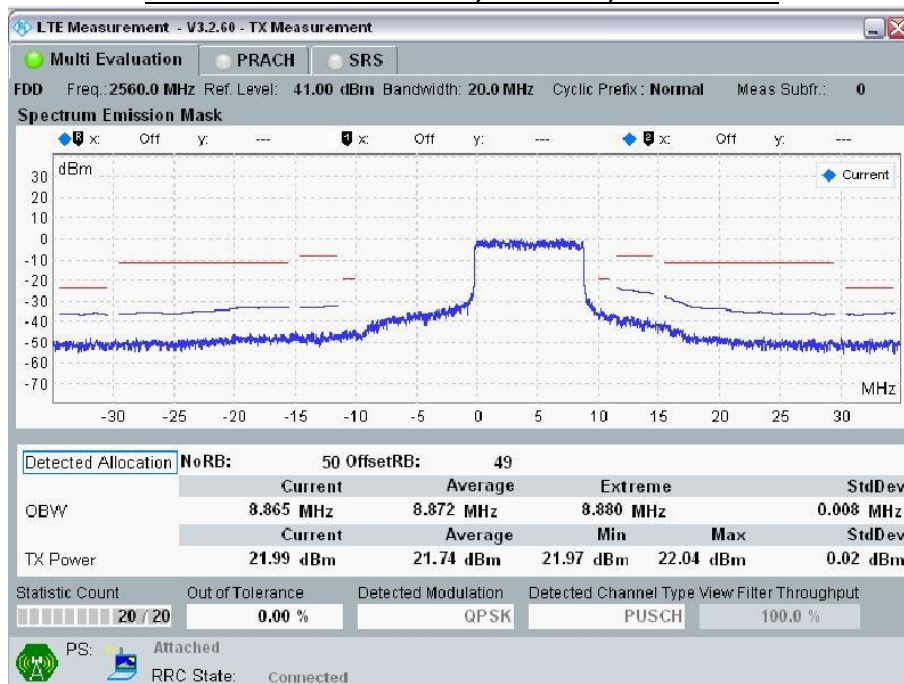
**20MHz Band Width: Ch 21350, RB Size=1; RB Offset = 99**



**20MHz Band Width: Ch 21350, RB Size=50; RB Offset = 0**

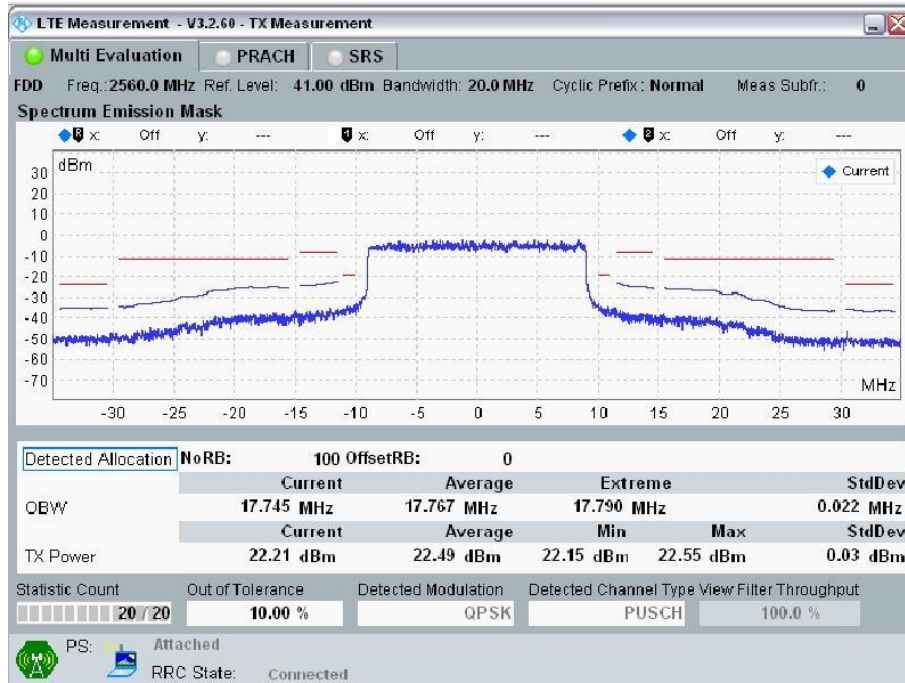


**20MHz Band Width: Ch 21350, RB Size=50; RB Offset = 24**



**20MHz Band Width: Ch 21350, RB Size=50; RB Offset = 49**





**20MHz Band Width: Ch 21350, RB Size=100; RB Offset = 0**

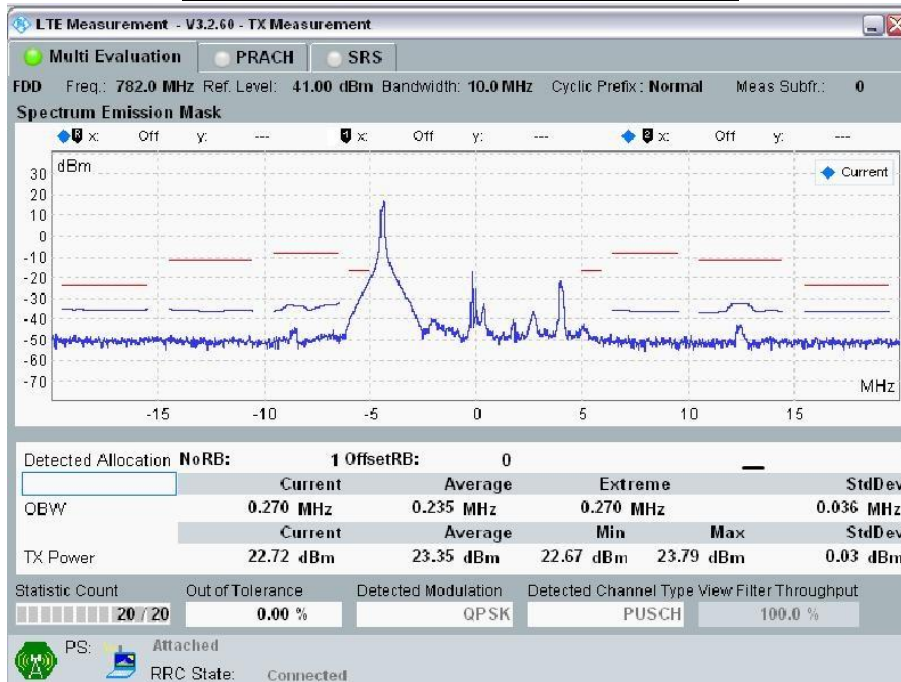
**10.6.5 LTE Band 13**

**Output power table**

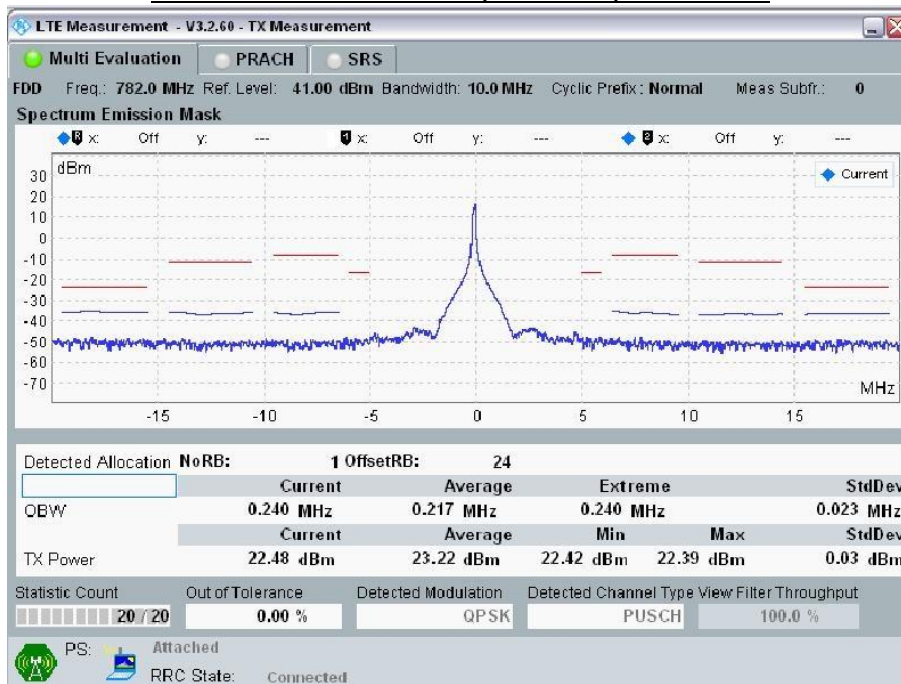
Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
13	10	23230	782.0	QPSK	1	0	0	23.4
					1	24	0	23.2
					1	49	0	23.1
					25	0	1	22.5
					25	12	1	22.2
					25	24	1	22.1
					50	0	1	22.4
				16QAM	1	0	1	22.5
					1	24	1	22.3
					1	49	1	22.1
					25	0	2	21.5
					25	12	2	21.3
					25	24	2	21.1
					50	0	2	21.2

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
13	5	23205	779.5	QPSK	1	0	0	23.4
					1	12	0	23.1
					1	24	0	23.0
					12	0	1	22.4
					12	6	1	22.1
					12	11	1	22.0
					25	0	1	22.4
				16QAM	1	0	1	22.5
					1	12	1	22.2
					1	24	1	22.0
					12	0	2	21.4
					12	6	2	21.2
					12	11	2	21.0
					25	0	2	21.1
		23230	782.0	QPSK	1	0	0	23.1
					1	12	0	23.3
					1	24	0	23.0
					12	0	1	22.4
					12	6	1	22.1
					12	11	1	22.0
					25	0	1	22.4
				16QAM	1	0	1	22.5
					1	12	1	22.2
					1	24	1	22.0
					12	0	2	21.4
					12	6	2	21.2
					12	11	2	21.0
					25	0	2	21.1
		23255	784.5	QPSK	1	0	0	23.4
					1	12	0	23.2
1	24				0	23.1		
12	0				1	22.4		
12	6				1	22.2		
12	11				1	22.1		
25	0				1	22.4		
16QAM	1			0	1	22.5		
	1			12	1	22.3		
	1			24	1	22.1		
	12			0	2	21.5		
	12			6	2	21.3		
	12			11	2	21.1		
	25			0	2	21.2		

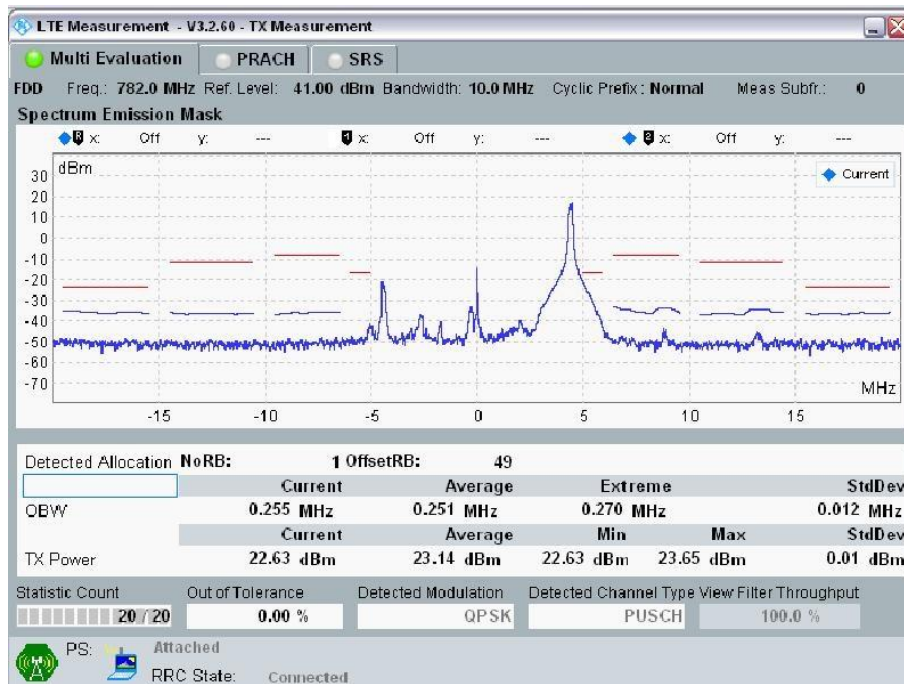
**Spectrum Plots for the Test RB allocations**



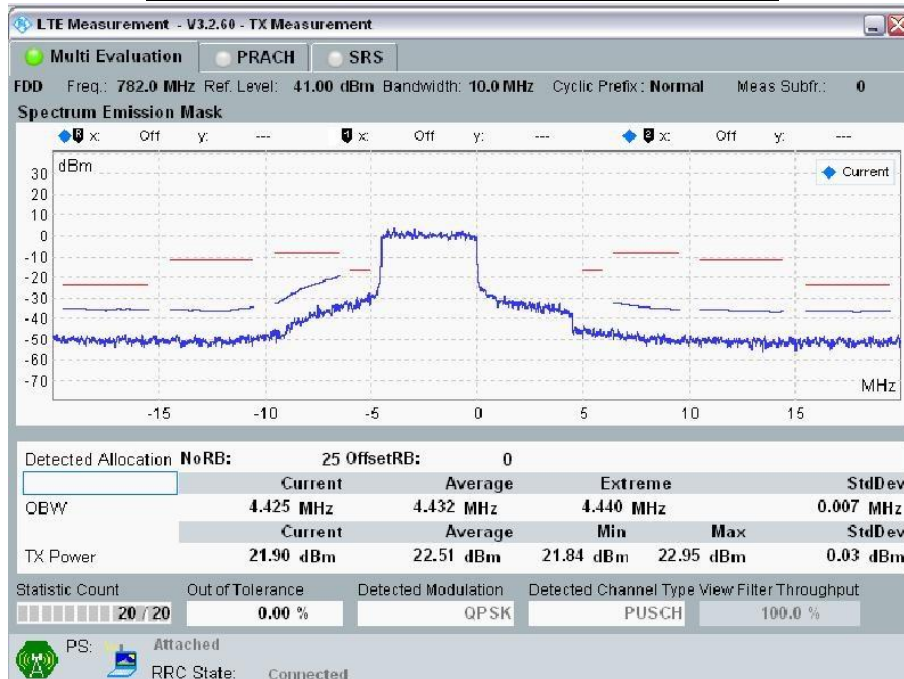
**10MHz Band Width: Ch 23230, RB Size = 1; RB Offset = 0**



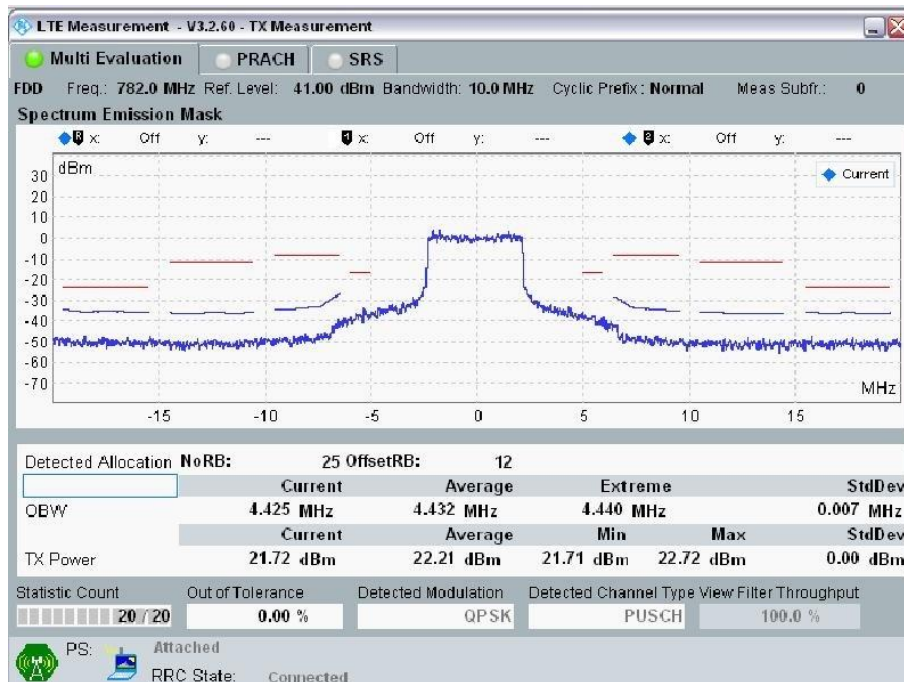
**10MHz Band Width: Ch 23230, RB Size = 1; RB Offset = 24**



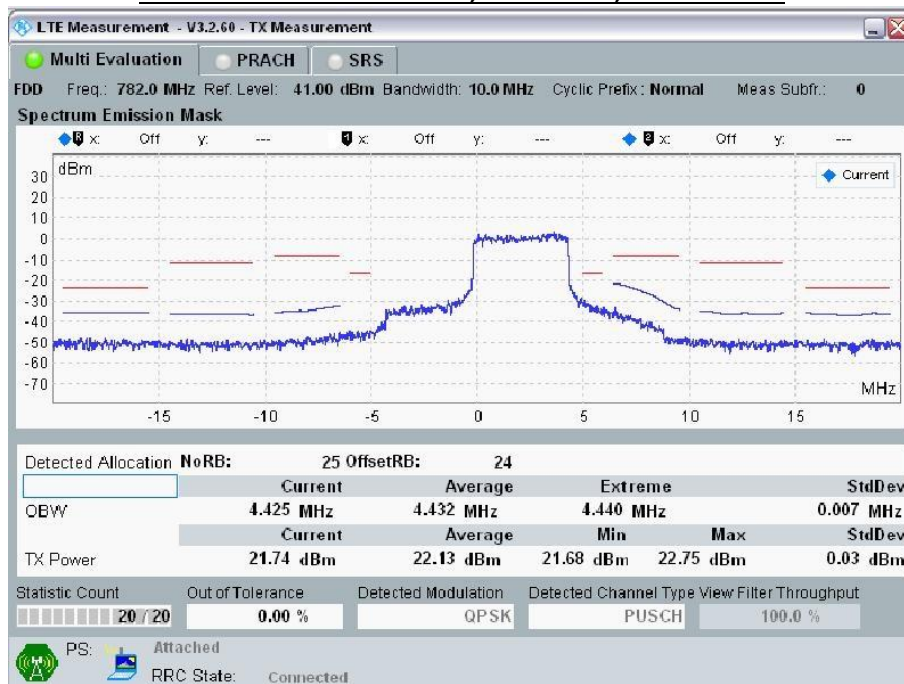
**10MHz Band Width: Ch 23230, RB Size = 1; RB Offset = 49**



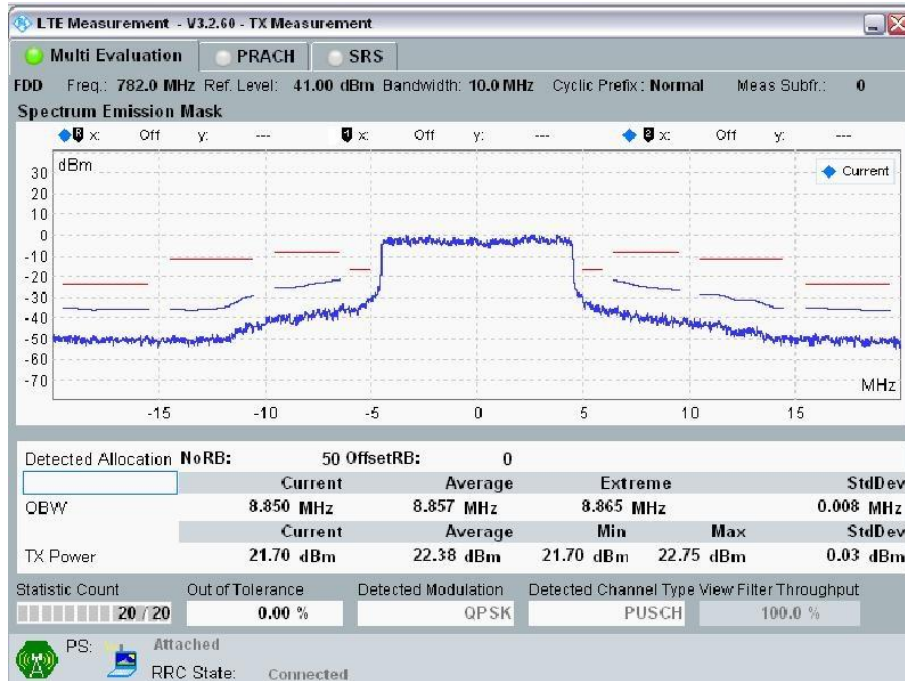
**10MHz Band Width: Ch 23230, RB Size = 25; RB Offset = 0**



**10MHz Band Width: Ch 23230, RB Size = 25; RB Offset = 12**



**10MHz Band Width: Ch 23230, RB Size = 25; RB Offset = 24**



**10MHz Band Width: Ch 23230, RB Size = 50; RB Offset = 0**

**10.6.6 LTE Band 17**

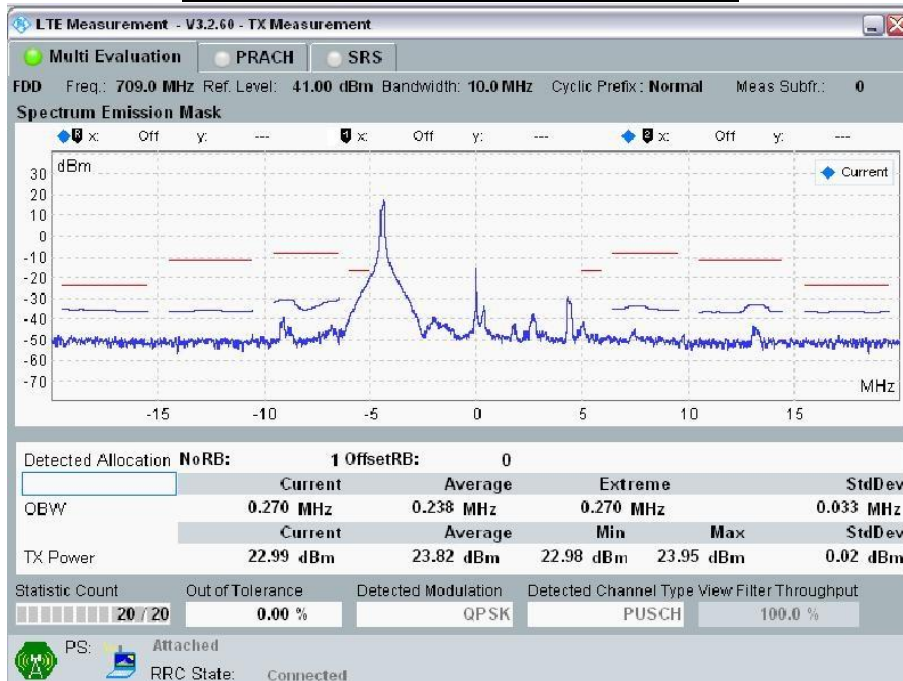
**Output power table**

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
17	10	23780	709.0	QPSK	1	0	0	23.8
					1	24	0	23.3
					1	49	0	23.0
					25	0	1	22.8
					25	12	1	22.4
					25	24	1	22.1
					50	0	1	22.8
				16QAM	1	0	1	22.9
					1	24	1	22.4
					1	49	1	22.1
					25	0	2	21.8
					25	12	2	21.3
					25	24	2	21.1
					50	0	2	21.0
		23790	710.0	QPSK	1	0	0	23.5
					1	24	0	23.3
					1	49	0	23.2
					25	0	1	22.6
					25	12	1	22.4
					25	24	1	22.3
					50	0	1	22.6
				16QAM	1	0	1	22.6
					1	24	1	22.4
					1	49	1	22.3
					25	0	2	21.6
					25	12	2	21.4
					25	24	2	21.3
					50	0	2	21.2
		23800	711.0	QPSK	1	0	0	23.6
					1	24	0	23.5
1	49				0	23.2		
25	0				1	22.7		
25	12				1	22.5		
25	24				1	22.2		
50	0				1	22.6		
16QAM	1			0	1	22.7		
	1			24	1	22.5		
	1			49	1	22.3		
	25			0	2	21.6		
	25			12	2	21.5		
	25			24	2	21.3		
	50			0	2	21.3		

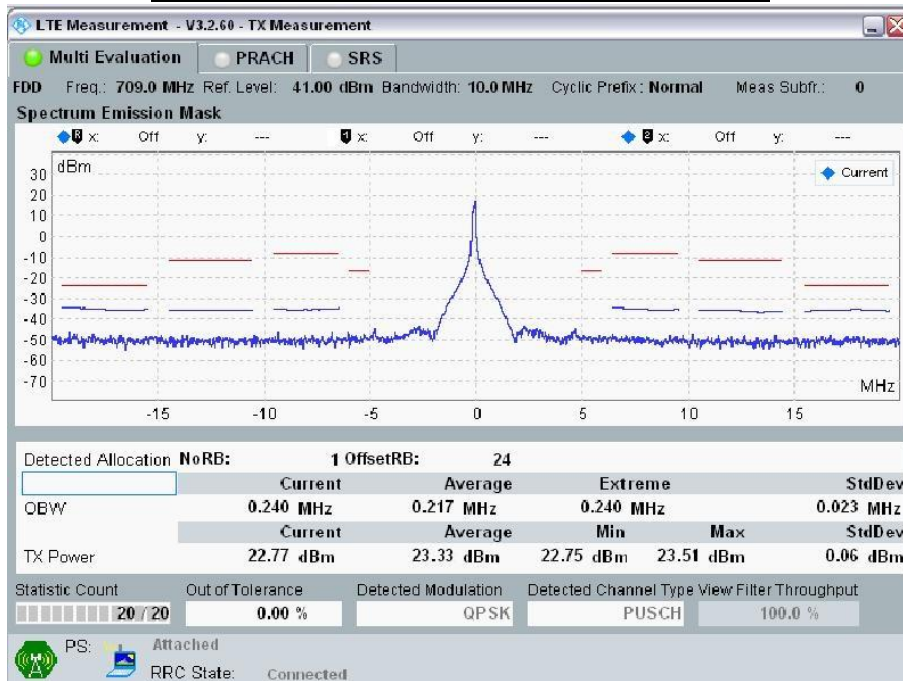


Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
17	5	23755	706.5	QPSK	1	0	0	23.7
					1	12	0	22.8
					1	24	0	22.9
					12	0	1	21.5
					12	6	1	21.7
					12	11	1	21.8
					25	0	1	21.5
				16QAM	1	0	1	21.6
					1	12	1	21.8
					1	24	1	21.9
					12	0	2	20.6
					12	6	2	20.8
					12	11	2	20.9
					25	0	2	20.5
		23790	710.0	QPSK	1	0	0	23.4
					1	12	0	23.3
					1	24	0	23.1
					12	0	1	22.5
					12	6	1	22.3
					12	11	1	22.2
					25	0	1	22.5
				16QAM	1	0	1	22.5
					1	12	1	22.3
					1	24	1	22.2
					12	0	2	21.5
					12	6	2	21.3
					12	11	2	21.2
					25	0	2	21.1
		23825	713.5	QPSK	1	0	0	23.5
					1	12	0	23.4
1	24				0	23.1		
12	0				1	22.6		
12	6				1	22.4		
12	11				1	22.1		
25	0				1	22.5		
16QAM	1			0	1	22.6		
	1			12	1	22.5		
	1			24	1	22.2		
	12			0	2	21.5		
	12			6	2	21.4		
	12			11	2	21.2		
	25			0	2	21.2		

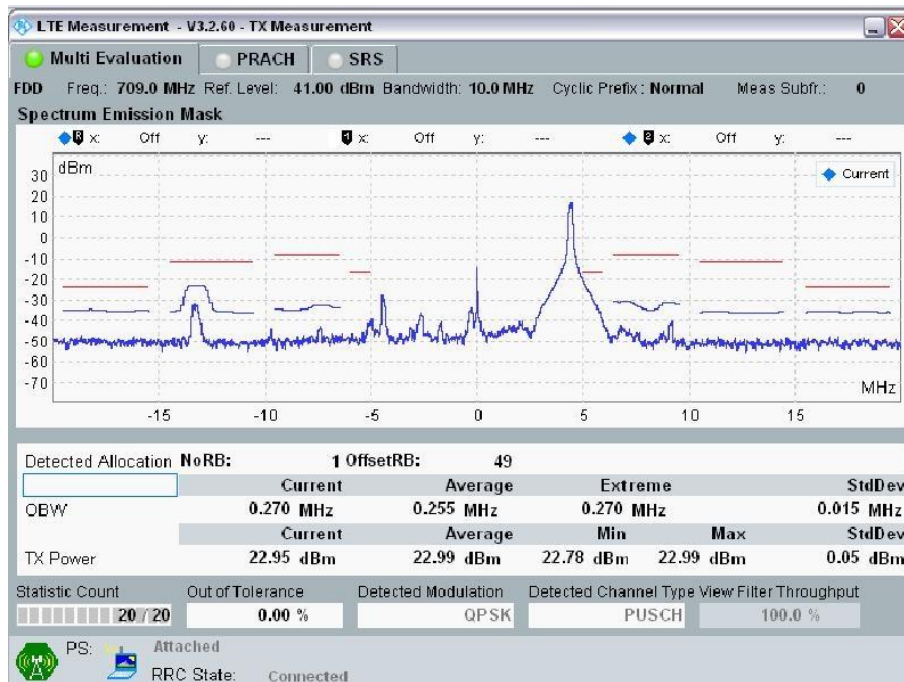
**Spectrum Plots for the Test RB allocations**



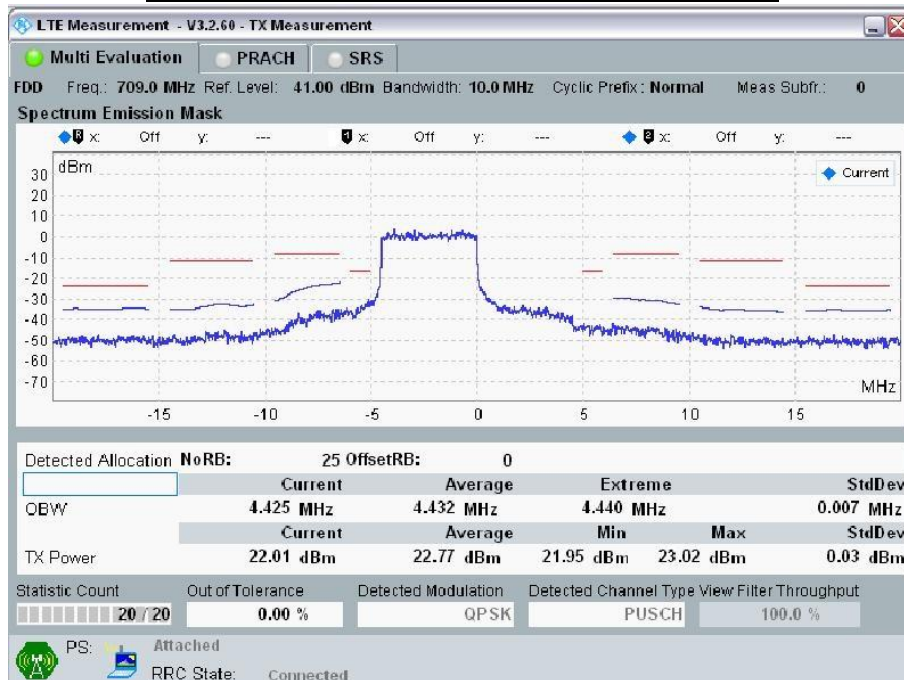
**10MHz Band Width: Ch 23780, RB Size = 1; RB Offset = 0**



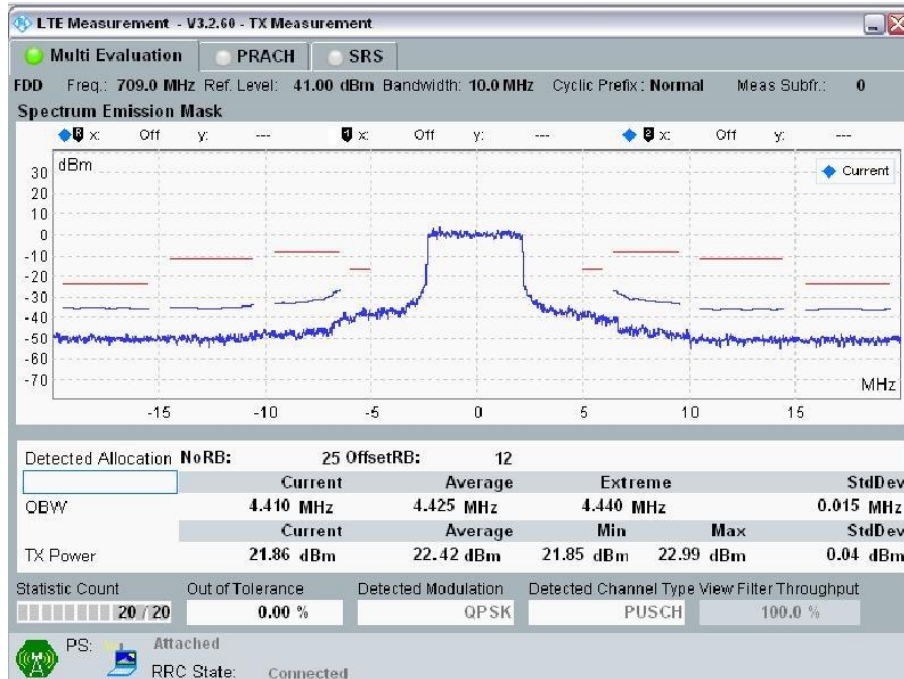
**10MHz Band Width: Ch 23780, RB Size = 1; RB Offset = 24**



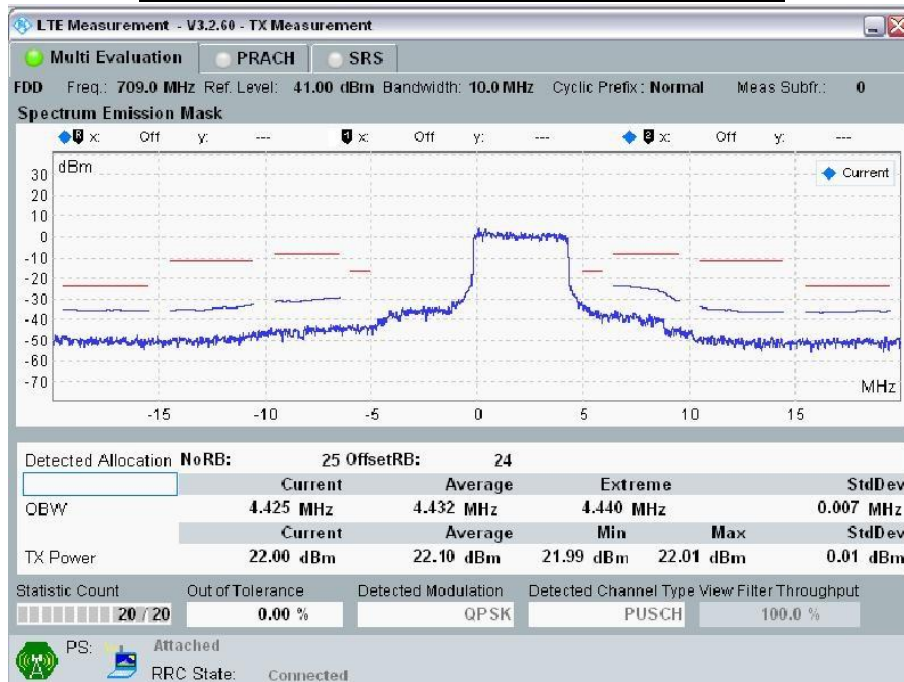
**10MHz Band Width: Ch 23780, RB Size = 1; RB Offset = 49**



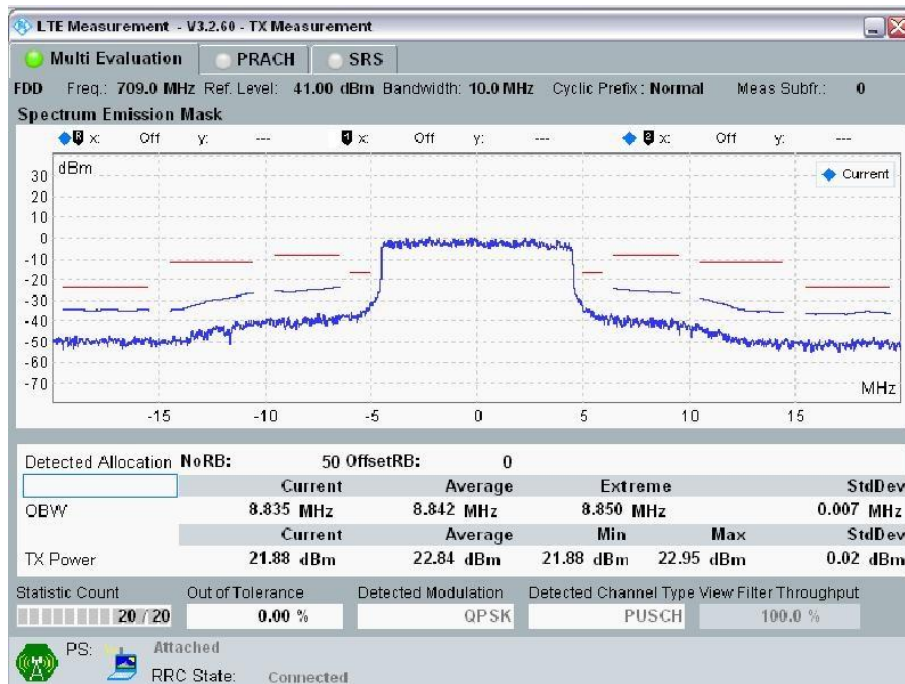
**10MHz Band Width: Ch 23780, RB Size = 25; RB Offset = 0**



**10MHz Band Width: Ch 23780, RB Size = 25; RB Offset = 12**



**10MHz Band Width: Ch 23780, RB Size = 25; RB Offset = 24**



**10MHz Band Width: Ch 23780, RB Size = 50; RB Offset = 0**

**10.7 Wi-Fi (2.4GHz Band)**

Band (GHz)	Mode	Data rate (Mbps)	Ch #	Freq. (MHz)	Avg. Pwr (dBm)	Maximum Tune-up Pwr (dBm)	SAR Test (Yes/No)	Note
2.4	802.11b	1	1	2412	15.7	16.5	Yes	
			6	2437	15.7	16.5		
			11	2462	15.9	16.5		
	802.11g	6	1	2412	Not Required	14.5	No	
			6	2437		14.5		
			11	2462		14.5		
	802.11n HT20	MCS0	1	2412	Not Required	13.5	No	
			6	2437		13.5		
			11	2462		13.5		
	802.11n HT40	MCS0	3	2422	Not Required	13.5	No	
			6	2437		13.5		
			9	2452		0.5		

**10.8 Bluetooth**

Modulation	Channel No.	Frequency(MHz)	Avg. power(dBm)
DH5	Low	2402	3.8
	Middle	2441	4.0
	High	2480	4.1
3DH5	Low	2402	3.1
	Middle	2441	3.3
	High	2480	3.3
BLE	Low	2402	7.2
	Middle	2440	7.3
	High	2480	7.4

## **11 Summary of SAR Test Exclusion Configurations**

### **11.1 Standalone SAR Test Exclusion Calculations**

Since the Dedicated Host Approach is applied, the standalone SAR test exclusion procedure in KDB 447498 section 4.3.1 is applied in conjunction with KDB 616217 section 4.3 to determine the minimum test separation distance:

1. According to KDB 447498 Section 4.1 5) if the antenna is at close proximity to user then the outer surface of the DUT should be treated as the radiating surface. The test separation distance is then determined by the smallest distance between the outer surface of the device and the user. For the purposes of this report close proximity has been defined as closer than 50 mm. For antennas <50 mm from the rear or edge the separation distance used for the estimated SAR calculations is 0 mm.
2. When the minimum test separation distance is < 5mm, a distance of 5mm is applied to determine SAR test exclusion.
3. When the separation distance from the antenna to an adjacent edge is > 5 mm, the actual antenna-to-edge separation distance is applied to determine SAR test exclusion.
4. If the antenna to DUT adjacent edge or bottom separation distance >50mm the actual antenna to user separation distance is used to determine SAR exclusion and estimated SAR value.

Refer to Appendix for the specific details on the antenna-to-antenna and antenna-to-edge distances used for test exclusion calculations.



**11.1.1 SAR Exclusion Calculations for Wi-Fi Antenna < 50mm from the User**

According to KDB 447498 v06 r02 in section 4.3.1, if the calculated threshold value is > 3 then SAR testing is required.

**For WWAN**

Full Power, Proximity Sensor Off.

Antenna	Band	Frequency (MHz)	Output Power		Separation Distances(mm)					Calculated Threshold Value				
			dBm	mW	Rear	Edge1	Edge2	Edge3	Edge4	Rear	Edge1	Edge2	Edge3	Edge4
WWAN	GPRS 850	836.0	25.7	372	4.40	19.00	224.10	42.00	7.90	77.30	17.90	>200mm	8.10	43.05
	GPRS 1900	1910.0	22.7	186	4.40	19.00	224.10	42.00	7.90	58.42	13.53	>200mm	6.12	32.54
	WCDMA Band II	1852.4	24.0	251	4.40	19.00	224.10	42.00	7.90	77.64	17.98	>200mm	8.13	43.24
	WCDMA Band IV	1712.4	24.0	251	4.40	19.00	224.10	42.00	7.90	74.65	17.29	>200mm	7.82	41.58
	WCDMA Band V	826.4	24.0	251	4.40	19.00	224.10	42.00	7.90	51.86	12.01	>200mm	5.43	28.88
	LTE Band 2	1860.0	24.0	251	4.40	19.00	224.10	42.00	7.90	77.80	18.02	>200mm	8.15	43.33
	LTE Band 4	1720.0	24.0	251	4.40	19.00	224.10	42.00	7.90	74.81	17.33	>200mm	7.84	41.67
	LTE Band 5	829.0	24.0	251	4.40	19.00	224.10	42.00	7.90	51.94	12.03	>200mm	5.44	28.93
	LTE Band 7	2510.0	24.0	251	4.40	19.00	224.10	42.00	7.90	90.38	20.93	>200mm	9.47	50.34
	LTE Band 13	782.0	24.0	251	4.40	19.00	224.10	42.00	7.90	50.45	11.68	>200mm	5.28	28.10
LTE Band 17	710.0	24.0	251	4.40	19.00	224.10	42.00	7.90	48.07	11.13	>200mm	5.04	26.77	

Power back off, Proximity Sensor On.

Antenna	Band	Frequency (MHz)	Output Power		Separation Distances(mm)					Calculated Threshold Value				
			dBm	mW	Rear	Edge1	Edge2	Edge3	Edge4	Rear	Edge1	Edge2	Edge3	Edge4
WWAN	GPRS 850	836.0	21.3	135	4.40	19.00	224.10	42.00	7.90	28.05	6.50	>200mm	2.94	15.62
	GPRS 1900	1910.0	20.3	107	4.40	19.00	224.10	42.00	7.90	33.61	7.78	>200mm	3.52	18.72
	WCDMA Band II	1852.4	20.0	100	4.40	19.00	224.10	42.00	7.90	30.93	7.16	>200mm	3.24	17.23
	WCDMA Band IV	1712.4	20.0	100	4.40	19.00	224.10	42.00	7.90	29.74	6.89	>200mm	3.12	16.56
	WCDMA Band V	826.4	21.0	126	4.40	19.00	224.10	42.00	7.90	26.03	6.03	>200mm	2.73	14.50
	LTE Band 2	1860.0	19.0	79	4.40	19.00	224.10	42.00	7.90	24.49	5.67	>200mm	2.57	13.64
	LTE Band 4	1720.0	20.0	100	4.40	19.00	224.10	42.00	7.90	29.81	6.90	>200mm	3.12	16.60
	LTE Band 7	2510.0	20.0	100	4.40	19.00	224.10	42.00	7.90	36.01	8.34	>200mm	3.77	20.05

**For WLAN**

Antenna	Band	Frequency (MHz)	Output Power		Separation Distances(mm)					Calculated Threshold Value				
			dBm	mW	Rear	Edge1	Edge2	Edge3	Edge4	Rear	Edge1	Edge2	Edge3	Edge4
Wi-Fi Main	2.4GHz	2437	16.0	40	4.40	8.00	93.50	129.00	121.50	14.19	7.81	>50mm	>50mm	>50mm
Wi-Fi Main	BLE	2440	9.0	8	4.40	8.00	93.50	129.00	121.50	2.84	1.56	>50mm	>50mm	>50mm

**11.1.2 SAR Exclusion Calculations for Wi-Fi Antenna > 50mm from the User**

According to KDB 447498 v06 r02, if the calculated Power threshold is less than the output power then SAR testing is required.

**For WWAN**

Full Power, Proximity Sensor Off.

Antenna	Band	Frequency (MHz)	Output Power		Separation Distances(mm)					Calculated Threshold Value				
			dBm	mW	Rear	Edge1	Edge2	Edge3	Edge4	Rear	Edge1	Edge2	Edge3	Edge4
WWAN	GPRS 850	836.0	25.7	372	4.4	19	224.1	42	7.9	<50mm	<50mm	1905.05	<50mm	<50mm
	GPRS 1900	1910.0	22.7	186	4.4	19	224.1	42	7.9	<50mm	<50mm	1849.54	<50mm	<50mm
	WCDMA Band II	1852.4	24.0	251	4.4	19	224.1	42	7.9	<50mm	<50mm	1851.21	<50mm	<50mm
	WCDMA Band IV	1712.4	24.0	251	4.4	19	224.1	42	7.9	<50mm	<50mm	1855.63	<50mm	<50mm
	WCDMA Band V	826.4	24.0	251	4.4	19	224.1	42	7.9	<50mm	<50mm	1906.00	<50mm	<50mm
	LTE Band 2	1860.0	24.0	251	4.4	19	224.1	42	7.9	<50mm	<50mm	1850.99	<50mm	<50mm
	LTE Band 4	1720.0	24.0	251	4.4	19	224.1	42	7.9	<50mm	<50mm	1855.37	<50mm	<50mm
	LTE Band 5	829.0	24.0	251	4.4	19	224.1	42	7.9	<50mm	<50mm	1905.75	<50mm	<50mm
	LTE Band 7	2510.0	24.0	251	4.4	19	224.1	42	7.9	<50mm	<50mm	1835.68	<50mm	<50mm
	LTE Band 13	782.0	24.0	251	4.4	19	224.1	42	7.9	<50mm	<50mm	1910.62	<50mm	<50mm
	LTE Band 17	710.0	24.0	251	4.4	19	224.1	42	7.9	<50mm	<50mm	1919.02	<50mm	<50mm

Power back off, Proximity Sensor On.

Antenna	Band	Frequency (MHz)	Output Power		Separation Distances(mm)					Calculated Threshold Value				
			dBm	mW	Rear	Edge1	Edge2	Edge3	Edge4	Rear	Edge1	Edge2	Edge3	Edge4
WWAN	GPRS 850	836.0	21.3	135	4.4	19	224.1	42	7.9	<50mm	<50mm	1905.05	<50mm	<50mm
	GPRS 1900	1910.0	20.3	107	4.4	19	224.1	42	7.9	<50mm	<50mm	1849.54	<50mm	<50mm
	WCDMA Band II	1852.4	20.0	100	4.4	19	224.1	42	7.9	<50mm	<50mm	1851.21	<50mm	<50mm
	WCDMA Band IV	1712.4	20.0	100	4.4	19	224.1	42	7.9	<50mm	<50mm	1855.63	<50mm	<50mm
	WCDMA Band V	826.4	21.0	126	4.4	19	224.1	42	7.9	<50mm	<50mm	1906.00	<50mm	<50mm
	LTE Band 2	1860.0	19.0	79	4.4	19	224.1	42	7.9	<50mm	<50mm	1850.99	<50mm	<50mm
	LTE Band 4	1720.0	20.0	100	4.4	19	224.1	42	7.9	<50mm	<50mm	1855.37	<50mm	<50mm
	LTE Band 7	2510.0	20.0	100	4.4	19	224.1	42	7.9	<50mm	<50mm	1835.68	<50mm	<50mm

**For WLAN**

Antenna	Band	Frequency (MHz)	Output Power		Separation Distances(mm)					Calculated Threshold Value				
			dBm	mW	Rear	Edge1	Edge2	Edge3	Edge4	Rear	Edge1	Edge2	Edge3	Edge4
Wi-Fi Main	2.4GHz	2437	16.0	40	4.4	8	93.50	129.00	121.50	<50mm	<50mm	531.09	886.09	811.09
Wi-Fi Main	BLE	2440	9.0	8	4.4	8	93.50	129.00	121.50	<50mm	<50mm	531.03	886.03	811.03

**11.1.3 SAR Required Test Configuration**

**For WWAN**

Full Power, Proximity Sensor Off

Test Configurations	Rear	Edge1	Edge2	Edge3	Edge4
GPRS 850	Yes	Yes	No	Yes	Yes
GPRS 1900	Yes	Yes	No	Yes	Yes
WCDMA Band II	Yes	Yes	No	Yes	Yes
WCDMA Band IV	Yes	Yes	No	Yes	Yes
WCDMA Band V	Yes	Yes	No	Yes	Yes
LTE Band 2	Yes	Yes	No	Yes	Yes
LTE Band 4	Yes	Yes	No	Yes	Yes
LTE Band 5	Yes	Yes	No	Yes	Yes
LTE Band 7	Yes	Yes	No	Yes	Yes
LTE Band 13	Yes	Yes	No	Yes	Yes
LTE Band 17	Yes	Yes	No	Yes	Yes
Wi-Fi 2.4GHz	Yes	Yes	No	No	No
Bluetooth	No	No	No	No	No

Note(s):

1. Yes = SAR is required.
2. No = SAR is not required.

Power back off, Proximity Sensor On

Test Configurations	Rear	Edge1	Edge2	Edge3	Edge4
GPRS 850	Yes	Yes	No	Yes	Yes
GPRS 1900	Yes	Yes	No	Yes	Yes
WCDMA Band II	Yes	Yes	No	Yes	Yes
WCDMA Band IV	Yes	Yes	No	Yes	Yes
WCDMA Band V	Yes	Yes	No	No	Yes
LTE Band 2	Yes	Yes	No	No	Yes
LTE Band 4	Yes	Yes	No	Yes	Yes
LTE Band 7	Yes	Yes	No	Yes	Yes

Note(s):

1. Yes = SAR is required.
2. No = SAR is not required.

## 12 Exposure Limit

(A). Limits for Occupational/Controlled Exposure (W/kg)

<u>Whole-Body</u>	<u>Partial-Body</u>	<u>Hands, Wrists, Feet and Ankles</u>
0.4	8.0	2.0

(B). Limits for General Population/Uncontrolled Exposure (W/kg)

<u>Whole-Body</u>	<u>Partial-Body</u>	<u>Hands, Wrists, Feet and Ankles</u>
0.08	1.6	4.0

NOTE: **Whole-Body SAR** is averaged over the entire body, **partial-body SAR** is averaged over any 1 gram of tissue defined as a tissue volume in the shape of a cube. **SAR for hands, wrists, feet and ankles** is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

**Population/Uncontrolled Environments:**

are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

**Occupational/Controlled Environments:**

are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure, (i.e. as a result of employment or occupation).

**NOTE**  
**GENERAL POPULATION/UNCONTROLLED EXPOSURE**  
**PARTIAL BODY LIMIT**  
**1.6 W/kg**

## 13 Tissue Dielectric Properties

### 13.1 Test Liquid Confirmation

#### Simulating Liquids Parameter Check

The simulating liquids should be checked at the beginning of a series of SAR measurements to determine if the dielectric parameters are within the tolerances of the specified target values

The relative permittivity and conductivity of the tissue material should be within  $\pm 5\%$  of the values given in the table below. 5% may not be easily achieved at certain frequencies.

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in IEEE 1528 2013 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in a human head. Other head and body tissue parameters that have not been specified in IEEE 1528 2013 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations and extrapolated according to the head parameters specified in IEEE 1528 2013

Target Frequency (MHz)	Head		Body	
	$\epsilon_r$	$\sigma$ (S/m)	$\epsilon_r$	$\sigma$ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800 – 2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5000	36.2	4.45	49.3	5.07
5100	36.1	4.55	49.1	5.18
5200	36.0	4.66	49.0	5.30
5300	35.9	4.76	48.9	5.42
5400	35.8	4.86	48.7	5.53
5500	35.6	4.96	48.6	5.65
5600	35.5	5.07	48.5	5.77
5700	35.4	5.17	48.3	5.88
5800	35.3	5.27	48.2	6.00

**13.2 Typical Composition of Ingredients for Liquid Tissue Phantoms**

The following tissue formulations are provided for reference only as some of the parameters have not been thoroughly verified. The composition of ingredients may be modified accordingly to achieve the desired target tissue parameters required for routine SAR evaluation.

Ingredients (% by weight)	Frequency (MHz)									
	450		835		915		1900		2450	
Tissue Type	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body
Water	38.56	51.16	41.45	52.4	41.05	56.0	54.9	40.4	62.7	73.2
Salt (NaCl)	3.95	1.49	1.45	1.4	1.35	0.76	0.18	0.5	0.5	0.04
Sugar	56.32	46.78	56.0	45.0	56.5	41.76	0.0	58.0	0.0	0.0
HEC	0.98	0.52	1.0	1.0	1.0	1.21	0.0	1.0	0.0	0.0
Bactericide	0.19	0.05	0.1	0.1	0.1	0.27	0.0	0.1	0.0	0.0
Triton X-100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.8	0.0
DGBE	0.0	0.0	0.0	0.0	0.0	0.0	44.92	0.0	0.0	26.7
Dielectric Constant	43.42	58.0	42.54	56.1	42.0	56.8	39.9	54.0	39.8	52.5
Conductivity (S/m)	0.85	0.83	0.91	0.95	1.0	1.07	1.42	1.45	1.88	1.78

alt: 99<sup>+</sup>% Pure Sodium Chloride                      Sugar: 98<sup>+</sup>% Pure Sucrose  
 Water: De-ionized, 16 MΩ<sup>+</sup> resistivity              HEC: Hydroxy thyl Cellulose  
 DGBE: 99<sup>+</sup>% Di(ethylene glycol) butyl ether, [2-(2-butoxyethoxy)ethanol]  
 Triton X-100 (ultra-pure): Polyethylene glycol mono [4-(1, 1, 3, 3-tetramethylbutyl)phenyl]ether

**Simulating Liquids for 5 GHz, Manufactured by SPEAG**

Ingredients	(% by weight)
Water	78
Mineral oil	11
Emulsifiers	9
Additives and Salt	2



**13.3 Simulating Liquids Parameter Check Results**

Date	Band	Freq(MHz)	Measured			Standard		Δ		Limit (%)
			e' (εr)	e''	σ	e' (εr)	σ	e' (εr)	σ	
2017/4/10	Body 1900	1855	52.17	14.27	1.47	53.30	1.52	-2.13%	-3.25%	±5
		1880	52.11	14.31	1.49	53.30	1.52	-2.24%	-1.68%	±5
		1905	52.02	14.35	1.52	53.30	1.52	-2.40%	-0.09%	±5
2017/4/11	Body 1900	1850.2	51.12	14.06	1.44	53.30	1.52	-4.10%	-4.95%	±5
		1880	51.02	13.98	1.46	53.30	1.52	-4.27%	-3.91%	±5
		1909.8	50.86	14.18	1.50	53.30	1.52	-4.58%	-1.01%	±5
2017/4/11	Body 1900	1852.4	51.12	14.04	1.45	53.30	1.52	-4.10%	-4.93%	±5
		1880	51.02	13.98	1.46	53.30	1.52	-4.27%	-3.91%	±5
		1907.6	50.87	14.16	1.50	53.30	1.52	-4.55%	-1.30%	±5
2017/4/13	Body 1800	1715	51.31	15.46	1.47	53.52	1.47	-4.14%	0.47%	±5
		1732.5	51.25	15.49	1.49	53.48	1.48	-4.17%	0.97%	±5
		1750	51.20	15.52	1.51	53.43	1.49	-4.17%	1.39%	±5
		1800	51.04	15.60	1.56	53.30	1.52	-4.24%	2.65%	±5
2017/4/14	Body 1800	1712.4	52.74	14.98	1.43	53.53	1.46	-1.47%	-2.69%	±5
		1732.4	52.73	14.86	1.43	53.48	1.48	-1.39%	-3.16%	±5
		1752.6	52.53	14.86	1.45	53.43	1.49	-1.68%	-2.89%	±5
2017/4/17	Body 750	782	56.52	22.68	0.99	55.41	0.97	2.00%	2.02%	±5
2017/4/17	Body 750	709	57.12	23.25	0.92	55.69	0.96	2.57%	-4.63%	±5
		710	57.12	23.25	0.92	55.69	0.96	2.57%	-4.51%	±5
		711	57.12	23.25	0.92	55.68	0.96	2.58%	-4.38%	±5
2017/4/18	Body 900	824.2	54.67	21.10	0.97	55.24	0.97	-1.04%	-0.32%	±5
		836.6	54.58	21.03	0.98	55.20	0.97	-1.12%	0.64%	±5
		848.8	54.47	20.92	0.99	55.16	0.99	-1.26%	0.06%	±5
2017/4/18	Body 900	826.4	54.67	21.10	0.97	55.24	0.97	-1.03%	-0.07%	±5
		836.6	54.58	21.03	0.98	55.20	0.97	-1.12%	0.64%	±5
		846.6	54.50	20.94	0.99	55.17	0.98	-1.21%	0.16%	±5
2017/4/18	Body 900	829	54.64	21.08	0.97	55.22	0.97	-1.06%	0.14%	±5
		836.5	54.58	21.03	0.98	55.20	0.97	-1.12%	0.63%	±5
		844	54.50	20.94	0.98	55.17	0.98	-1.22%	0.10%	±5
2017/4/19	Body 2450	2412	52.46	14.49	1.94	52.75	1.91	-0.56%	1.44%	±5
		2437	52.47	14.54	1.97	52.72	1.94	-0.47%	1.63%	±5
		2442	52.45	14.54	1.97	52.71	1.94	-0.49%	1.56%	±5
		2450	52.41	14.54	1.98	52.70	1.95	-0.55%	1.51%	±5
		2462	52.31	14.55	1.99	52.68	1.97	-0.71%	1.16%	±5
		2472	52.22	14.56	2.00	52.67	1.98	-0.86%	0.92%	±5
		2480	52.17	14.58	2.01	52.66	1.99	-0.94%	0.84%	±5
2017/4/19	Body 2600	2510	51.95	14.98	2.09	52.62	2.04	-1.27%	2.64%	±5
		2535	51.84	15.01	2.11	52.59	2.07	-1.43%	2.07%	±5
		2560	51.79	15.04	2.14	52.56	2.11	-1.46%	1.56%	±5
		2600	51.75	15.10	2.18	52.51	2.16	-1.45%	0.83%	±5

## **14 Measurement Uncertainty**

According to KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz section 2.8.2, SAR measurement uncertainty analysis is required in SAR reports only when the highest measured SAR in a frequency band is  $\geq 1.5$  W/kg for 1-g SAR, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval.

## 15 System Performance Check

The system performance check is performed prior to any usage of the system in order to guarantee reproducible results. The system performance check verifies that the system operates within its specifications. The system performance check results are tabulated below. And also the corresponding SAR plot is attached as well in the SAR plots files.

### System Performance Check Measurement Conditions

- The measurements were performed in the flat section of the SAM twin phantom filled with Body simulating liquid of the following parameters.
- The depth of tissue-equivalent liquid in a phantom must be  $\geq 15.0$  cm
- The DASY5 system with E-field probe EX3DV4 SN:3665 was used for the measurements.
- The dipole was mounted on the small tripod so that the dipole feed point was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 15 mm (below 1 GHz) and 10 mm (above 1 GHz) from dipole center to the simulating liquid surface.
- The coarse grid with a grid spacing of 10mm was aligned with the dipole.
- Special 7x7x7 fine cube was chosen for cube integration ( $dx=dy= 5$  mm,  $dz= 5$  mm).
- Distance between probe sensors and phantom surface was set to 3.0 mm.
- The dipole input power (forward power) was 100 mW $\pm$ 3%.
- The results are normalized to 1 W input power.

### Reference SAR Values for System Performance Check

The reference SAR values can be obtained from the calibration certificate of system validation dipoles

System Dipole	Serial No.	Cal. Date	Freq. (MHz)	Target SAR Values (W/kg)		
				1g/10g	Head	Body
D750V3	1020	2017/01/18	750	1g	8.43	8.67
				10g	5.47	5.66
D835V2	4d015	2017/03/21	835	1g	9.45	9.75
				10g	6.18	6.39
D1750V2	1158	2016/12/07	1800	1g	36.3	36.4
				10g	19.2	19.5
D1900V2	5d056	2017/02/17	1900	1g	39.9	40.2
				10g	20.7	21.1
D2450V2	728	2016/05/24	2450	1g	50.5	50.3
				10g	23.7	23.7
D2600V2	1058	2017/06/27	2600	1g	57.0	54.3
				10g	25.5	24.3

**15.1 System Performance Check Results**

Date	System Dipole			Parameters	Target	Measured	Deviation[%]	Limited[%]
	Type	Serial No.	Liquid					
2017/4/10	D1900V2	5d056	Body	1g SAR:	40.20	40.20	0.00	± 5
				10g SAR:	21.10	21.00	-0.47	± 5
2017/4/11	D1900V2	5d056	Body	1g SAR:	40.20	39.50	-1.74	± 5
				10g SAR:	21.10	20.60	-2.37	± 5
2017/4/13	D1750V2	1158	Body	1g SAR:	36.40	36.70	0.82	± 5
				10g SAR:	19.50	19.30	-1.03	± 5
2017/4/14	D1750V2	1158	Body	1g SAR:	36.40	35.30	-3.02	± 5
				10g SAR:	19.50	18.60	-4.62	± 5
2017/4/17	D750V3	1020	Body	1g SAR:	8.67	8.74	0.81	± 5
				10g SAR:	5.66	5.78	2.12	± 5
2017/4/18	D835V2	4d015	Body	1g SAR:	9.75	9.98	2.36	± 5
				10g SAR:	6.39	6.61	3.44	± 5
2017/4/19	D2450V2	728	Body	1g SAR:	50.30	51.00	1.39	± 5
				10g SAR:	23.70	24.00	1.27	± 5
2017/4/19	D2600V2	1058	Body	1g SAR:	54.30	55.50	2.21	± 5
				10g SAR:	24.30	23.40	-3.70	± 5

## 16 SAR Measurements Results

### GPRS 850

Power back off (On/Off)	Mode	Slot	Test Position	Channel	Freq. (MHz)	Dist. (mm)	Frame Power (dBm)		Meas 1g SAR (W/kg)	Reported SAR(W/kg)	Note	Plot.
							Tune up limit	Measured				
On	GPRS 850	3	Edge1	128	824.2	0	21.7	21.0	0.312	0.367		
		3	Edge3	128	824.2	0	21.7	21.0	0.047	0.055		
		3	Edge4	128	824.2	0	21.7	21.0	0.359	0.422		
		3	Rear	128	824.2	0	21.7	21.0	0.084	0.099		
Off		3	Edge1	128	824.2	9	25.7	25.4	0.127	0.136		
		3	Edge3	128	824.2	9	25.7	25.4	0.091	0.098		
		3	Edge4	128	824.2	9	25.7	25.4	0.266	0.285		
		3	Rear	128	824.2	9	25.7	25.4	0.387	0.415		1

### GPRS 1900

Power back off (On/Off)	Mode	Slot	Test Position	Channel	Freq. (MHz)	Dist. (mm)	Frame Power (dBm)		Meas 1g SAR (W/kg)	Reported SAR(W/kg)	Note	Plot.
							Tune up limit	Measured				
On	GPRS 1900	3	Edge1	661	1880.0	0	20.7	20.0	0.219	0.257		
		3	Edge3	661	1880.0	0	20.7	20.0	0.048	0.056		
		3	Edge4	661	1880.0	0	20.7	20.0	0.179	0.210		
		3	Rear	661	1880.0	0	20.7	20.0	0.359	0.422		
Off		3	Edge1	661	1880.0	9	22.7	22.3	0.103	0.113		
		3	Edge3	661	1880.0	9	22.7	22.3	0.092	0.101		
		3	Edge4	661	1880.0	9	22.7	22.3	0.108	0.118		
		3	Rear	661	1880.0	9	22.7	22.3	0.580	0.636		2

**WCDMA Band II:**

Power back off (On/Off)	Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note	Plot.
						Tune up limit	Measured				
On	Rel 99 RMC 12.2Kbps	Edge 1	9400	1880.0	0	20.0	19.9	0.323	0.331		
		Edge 3	9400	1880.0	0	20.0	19.9	0.168	0.172		
		Edge 4	9400	1880.0	0	20.0	19.9	0.559	0.572		
		Rear	9400	1880.0	0	20.0	19.9	1.170	1.197		
		Rear	9262	1852.4	0	20.0	19.8	1.140	1.194	1	
		Rear	9538	1907.6	0	20.0	19.9	1.190	1.218	1	
Off	Rel 99 RMC 12.2Kbps	Rear	9538	1907.6	0	20.0	19.9	1.200	1.228	2	3
		Edge 1	9400	1880.0	9	24.0	23.2	0.165	0.198		
		Edge 3	9400	1880.0	9	24.0	23.2	0.161	0.194		
		Edge 4	9400	1880.0	9	24.0	23.2	0.235	0.283		
		Rear	9400	1880.0	9	24.0	23.2	0.500	0.601		

**Note(s):**

1. Testing of other required channels within the operating mode of a frequency band is required when the reported 1-g SAR for the mid-band or highest output power channel.  $\geq 0.8$  W/kg and transmission band  $\leq 100$  MHz (Per KDB 447498 D01 v06)
2. Repeated measurements are required only when the measured SAR is  $\geq 0.80$  W/kg. If the measured SAR values are  $< 1.45$  W/kg with  $\leq 20\%$  variation, only one repeated measurement is required to reaffirm that the results are not expected to have substantial variations, which may introduce significant compliance concerns. (Per KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04)
  - 2.1 Original SAR = 1.19 W/kg, therefore two times repeat SAR is required.
  - 2.2 Repeat SAR = 1.2 W/kg  $< 1.45$ W/kg
  - 2.3 SAR variation= -0.84%

**WCDMA Band IV:**

Power back off (On/Off)	Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note	Plot
						Tune up limit	Measured				
On	Rel 99 RMC 12.2Kbps	Edge 1	1413	1732.6	0	20.0	20.0	0.340	0.340		
		Edge 3	1413	1732.6	0	20.0	20.0	0.198	0.198		
		Edge 4	1413	1732.6	0	20.0	20.0	0.606	0.606		
		Rear	1413	1732.6	0	20.0	20.0	1.150	1.150		4
		Rear	1312	1712.4	0	20.0	19.9	1.120	1.146	1	
		Rear	1513	1752.6	0	20.0	19.7	1.020	1.093	1	
Off	Rel 99 RMC 12.2Kbps	Rear	1413	1732.6	0	20.0	20.0	1.110	1.110	2	
		Edge 1	1413	1732.6	9	24.0	23.2	0.206	0.248		
		Edge 3	1413	1732.6	9	24.0	23.2	0.037	0.044		
		Edge 4	1413	1732.6	9	24.0	23.2	0.535	0.643		
		Rear	1413	1732.6	9	24.0	23.2	0.637	0.766		

**Note(s):**

1. Testing of other required channels within the operating mode of a frequency band is required when the reported 1-g SAR for the mid-band or highest output power channel.  $\geq 0.8$  W/kg and transmission band  $\leq 100$  MHz (Per KDB 447498 D01 v06)
2. Repeated measurements are required only when the measured SAR is  $\geq 0.80$  W/kg. If the measured SAR values are  $< 1.45$  W/kg with  $\leq 20\%$  variation, only one repeated measurement is required to reaffirm that the results are not expected to have substantial variations, which may introduce significant compliance concerns. (Per KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04)
  - 2.1 Original SAR = 1.15 W/kg, therefore two times repeat SAR is required.
  - 2.2 Repeat SAR = 1.11/kg  $< 1.45$ W/kg
  - 2.3 SAR variation= 3.48%  $< 20\%$

**WCDMA Band V:**

Power back off (On/Off)	Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note	Plot
						Tune up limit	Measured				
On	Rel 99 RMC 12.2Kbps	Edge 1	4233	846.6	0	21.0	20.7	0.574	0.615		
		Edge 4	4233	846.6	0	21.0	20.7	0.751	0.805		
		Edge 4	4132	826.4	0	21.0	20.5	0.537	0.603	1	
		Rear	4233	846.6	0	21.0	20.7	0.953	1.021		5
		Rear	4132	826.4	0	21.0	20.5	0.590	0.662	1	
		Rear	4183	836.6	0	21.0	20.3	0.495	0.582	1	
		Rear	4233	846.6	0	21.0	20.7	0.952	1.020	2	
Off	Rel 99 RMC 12.2Kbps	Edge 1	4233	846.6	9	24.0	23.6	0.145	0.159		
		Edge 3	4233	846.6	9	24.0	23.6	0.018	0.020		
		Edge 4	4233	846.6	9	24.0	23.6	0.113	0.124		
		Rear	4233	846.6	9	24.0	23.6	0.266	0.292		

**Note(s):**

1. Testing of other required channels within the operating mode of a frequency band is required when the reported 1-g SAR for the mid-band or highest output power channel.  $\geq 0.8$  W/kg and transmission band  $\leq 100$  MHz (Per KDB 447498 D01 v06)
2. Repeated measurements are required only when the measured SAR is  $\geq 0.80$  W/kg. If the measured SAR values are  $< 1.45$  W/kg with  $\leq 20\%$  variation, only one repeated measurement is required to reaffirm that the results are not expected to have substantial variations, which may introduce significant compliance concerns. (Per KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04)
  - 2.1 Original SAR = 0.953 W/kg, therefore two times repeat SAR is required.
  - 2.2 Repeat SAR = 0.952 W/kg  $< 1.45$ W/kg
  - 2.3 SAR variation= 0.1 %  $< 20\%$



**LTE Band 2 (20MHz Bandwidth):**

Power back off (On/Off)	Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	UL RB Allocation	UL RB Start	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note	Plot
								Tune up limit	Measured				
On	QPSK	Edge1	18900	1880.0	0	1	0	19.0	19.0	0.353	0.353	1	
			18900	1880.0	0	50	0	18.0	18.0	0.289	0.289	1	
		Edge 4	18900	1880.0	0	1	0	19.0	19.0	0.559	0.559	1	
			18900	1880.0	0	50	0	18.0	18.0	0.479	0.479	1	
		Rear	18900	1880.0	0	1	0	19.0	19.0	1.190	1.190		
			18900	1880.0	0	1	49	19.0	18.8	1.120	1.173	2	
			18900	1880.0	0	1	99	19.0	18.7	1.110	1.189	2	
			18900	1880.0	0	50	0	18.0	18.0	0.972	0.972		
			18900	1880.0	0	50	24	18.0	17.8	0.930	0.974	2	
			18900	1880.0	0	50	49	18.0	17.8	0.929	0.973	2	
			18900	1880.0	0	100	0	18.0	18.0	0.956	0.956	2	
			18700	1860.0	0	1	0	19.0	18.9	1.060	1.085	2	
			18700	1860.0	0	50	0	18.0	18.0	0.790	0.790	2	
			19100	1900.0	0	1	0	19.0	18.9	1.050	1.074	2	
19100	1900.0	0	50	0	18.0	18.0	0.961	0.961	2				
18900	1880.0	0	1	0	19.0	19.0	1.240	1.240	3	6			
Off	QPSK	Edge1	18900	1880.0	9	1	0	24.0	23.9	0.297	0.304	1	
			18900	1880.0	9	50	0	23.0	23.0	0.262	0.262	1	
		Edge3	18900	1880.0	9	1	0	24.0	23.9	0.253	0.259	1	
			18900	1880.0	9	50	0	23.0	23.0	0.240	0.240	1	
		Edge4	18900	1880.0	9	1	0	24.0	23.9	0.430	0.440	1	
			18900	1880.0	9	50	0	23.0	23.0	0.370	0.370	1	
		Rear	18900	1880.0	9	1	0	24.0	23.9	1.010	1.034		
			18900	1880.0	9	1	49	24.0	23.8	0.927	0.971	2	
			18900	1880.0	9	1	99	24.0	23.4	0.975	1.119	2	
			18900	1880.0	9	50	0	23.0	23.0	0.786	0.786	1	
			18900	1880.0	9	100	0	23.0	23.0	0.742	0.742	2	
			18700	1860.0	9	1	0	24.0	23.6	0.843	0.924	2	
19100	1900.0	9	1	0	24.0	23.6	1.040	1.140	2				

**Note(s):**

1. When the reported SAR is  $\leq 0.8$  W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. (Per KDB 941225 D05 v02r05)
2. The highest reported SAR for 1 RB and 50% RB allocation are  $\geq 0.8$  W/kg, SAR is required of 100% RB. Testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation  $< 1.45$  W/kg. (Per KDB 941225 D05 v02r05)
3. Repeated measurements are required only when the measured SAR is  $\geq 0.80$  W/kg. If the measured SAR values are  $< 1.45$  W/kg with  $\leq 20\%$  variation, only one repeated measurement is required to reaffirm that the results are not expected to have substantial variations, which may introduce significant compliance concerns. (Per KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04)
  - 3.1 Original SAR = 1.190 W/kg, therefore two times repeat SAR is required.
  - 3.2 Repeat SAR = 1.240 W/kg  $< 1.45$ W/kg
  - 3.3 SAR variation= -4.2 %  $< 20\%$

**LTE Band 4 (20MHz Bandwidth):**

Power back off (On/Off)	Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	UL RB Allocation	UL RB Start	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note	Plots
								Tune up limit	Measured				
On	QPSK	Edge1	20175	1732.5	0	1	0	20.0	20.0	0.477	0.477	1	
			20175	1732.5	0	50	0	19.0	19.0	0.364	0.364	1	
		Edge3	20175	1732.5	0	1	0	20.0	20.0	0.005	0.005	1	
			20175	1732.5	0	50	0	19.0	19.0	0.005	0.005	1	
		Edge4	20175	1732.5	0	1	0	20.0	20.0	0.919	0.919		
			20175	1732.5	0	1	49	20.0	20.0	0.882	0.882		
			20175	1732.5	0	1	99	20.0	20.0	0.702	0.702		
		Rear	20175	1732.5	0	50	0	19.0	19.0	0.663	0.663	1	
			20175	1732.5	0	1	0	20.0	20.0	1.260	1.260		7
			20175	1732.5	0	1	49	20.0	19.7	0.805	0.863	2	
			20175	1732.5	0	1	99	20.0	19.7	0.830	0.889	2	
			20175	1732.5	0	50	0	19.0	19.0	0.763	0.763		
			20175	1732.5	0	100	0	19.0	19.0	0.738	0.738		
			20050	1720.0	0	1	0	20.0	19.9	1.180	1.207	2	
20300	1745.0	0	1	0	20.0	19.5	1.020	1.144	2				
20175	1732.5	0	1	0	20.0	20.0	1.210	1.210	3				
Off	QPSK	Edge1	20175	1732.5	9	1	0	24.0	23.8	0.335	0.351	1	
			20175	1732.5	9	50	0	23.0	22.9	0.279	0.285	1	
		Edge3	20175	1732.5	9	1	0	24.0	23.8	0.155	0.162	1	
			20175	1732.5	9	50	0	23.0	22.9	0.134	0.137	1	
		Edge4	20175	1732.5	9	1	0	24.0	23.8	0.549	0.575	1	
			20175	1732.5	9	50	0	23.0	22.9	0.439	0.449	1	
		Rear	20175	1732.5	9	1	0	24.0	23.8	0.763	0.799	1	
			20175	1732.5	9	50	0	23.0	22.9	0.583	0.597	1	

**Note(s):**

1. When the reported SAR is  $\leq 0.8$  W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. (Per KDB 941225 D05 v02r05)
2. The highest reported SAR for 1 RB and 50% RB allocation are  $\geq 0.8$  W/kg, SAR is required of 100% RB. Testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation  $< 1.45$  W/kg. (Per KDB 941225 D05 v02r05)
3. Repeated measurements are required only when the measured SAR is  $\geq 0.80$  W/kg. If the measured SAR values are  $< 1.45$  W/kg with  $\leq 20\%$  variation, only one repeated measurement is required to reaffirm that the results are not expected to have substantial variations, which may introduce significant compliance concerns. (Per KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04)
  - 3.1 Original SAR = 1.260 W/kg, therefore two times repeat SAR is required.
  - 3.2 Repeat SAR = 1.210 W/kg  $< 1.45$ W/kg
  - 3.3 SAR variation= 3.97 %  $< 20\%$

**LTE Band 5 (10MHz Bandwidth):**

Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	UL RB Allocation	UL RB Start	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note	Plot.
							Tune up limit	Measured				
QPSK	Edge1	20450	829.0	0	1	0	24.0	23.5	0.550	0.617	1	
		20450	829.0	0	25	0	23.0	22.5	0.415	0.466	1	
	Edge3	20450	829.0	0	1	0	24.0	23.5	0.058	0.065	1	
		20450	829.0	0	25	0	23.0	22.5	0.049	0.055	1	
	Edge4	20450	829.0	0	1	0	24.0	23.5	0.616	0.691	1	
		20450	829.0	0	25	0	23.0	22.5	0.473	0.531	1	
	Rear	20450	829.0	0	1	0	24.0	23.5	0.924	1.037		
		20450	829.0	0	1	24	24.0	23.4	0.858	0.985	2	
		20450	829.0	0	1	49	24.0	23.3	0.905	1.063	2	8
		20450	829.0	0	25	0	23.0	22.5	0.726	0.815		
		20450	829.0	0	25	12	23.0	22.5	0.715	0.802	2	
		20450	829.0	0	25	24	23.0	22.4	0.709	0.814	2	
		20450	829.0	0	50	0	23.0	22.6	0.719	0.788		
		20525	836.5	0	1	0	24.0	23.4	0.833	0.956	2	
		20525	836.5	0	25	0	23.0	22.5	0.748	0.839	2	
		20600	844.0	0	1	0	24.0	23.3	0.837	0.983	2	
20600	844.0	0	25	0	23.0	22.4	0.745	0.855	2			
20450	829.0	0	1	0	24.0	23.5	0.939	1.054	3			

**Note(s):**

- When the reported SAR is  $\leq 0.8$  W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. (Per KDB 941225 D05 v02r05)
- The highest reported SAR for 1 RB and 50% RB allocation are  $\geq 0.8$  W/kg, SAR is required of 100% RB. Testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation  $< 1.45$  W/kg. (Per KDB 941225 D05 v02r05)
- Repeated measurements are required only when the measured SAR is  $\geq 0.80$  W/kg. If the measured SAR values are  $< 1.45$  W/kg with  $\leq 20\%$  variation, only one repeated measurement is required to reaffirm that the results are not expected to have substantial variations, which may introduce significant compliance concerns. (Per KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04)
  - Original SAR = 0.924 W/kg, therefore two times repeat SAR is required.
  - Repeat SAR = 0.939 W/kg  $< 1.45$ W/kg
  - SAR variation= -1.62 %  $< 20\%$

LTE Band 7 (20MHz Bandwidth):

Power back off (On/Off)	Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	UL RB Allocation	UL RB Start	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note	Plot.
								Tune up limit	Measured				
On	QPSK	Edge1	21350	2560.0	0	1	0	20.0	20.0	0.559	0.559		
			21350	2560.0	0	50	0	19.0	19.0	0.521	0.521		
		Edge 3	21350	2560.0	0	1	0	20.0	20.0	0.215	0.215		
			21350	2560.0	0	50	0	19.0	19.0	0.187	0.187		
		Edge4	21350	2560.0	0	1	0	20.0	20.0	1.180	1.180		
			21350	2560.0	0	1	49	20.0	19.8	1.100	1.152	2	
			21350	2560.0	0	1	99	20.0	19.8	1.010	1.058	2	
			21350	2560.0	0	50	0	19.0	19.0	0.962	0.962		
			21350	2560.0	0	50	24	19.0	18.9	0.892	0.913	2	
			21350	2560.0	0	50	49	19.0	18.8	0.908	0.951	2	
			21350	2560.0	0	100	0	19.0	19.0	0.991	0.991	2	
			20850	2535.0	0	1	0	20.0	19.9	1.130	1.156	2	
			20850	2535.0	0	50	0	19.0	19.0	0.886	0.886	2	
			21100	2535.0	0	1	0	20.0	19.7	0.955	1.023	2	
			21100	2535.0	0	50	0	19.0	18.8	0.927	0.971	2	
			21350	2560.0	0	1	0	20.0	20.0	1.200	1.200	3	9
		Rear	21350	2560.0	0	1	0	20.0	20.0	1.010	1.010		
			21350	2560.0	0	1	49	20.0	19.8	1.000	1.047	2	
			21350	2560.0	0	1	99	20.0	19.8	0.923	0.966	2	
			21350	2560.0	0	50	0	19.0	19.0	0.803	0.803		
			21350	2560.0	0	50	24	19.0	18.9	0.767	0.785	2	
			21350	2560.0	0	50	49	19.0	18.8	0.800	0.838	2	
			21350	2560.0	0	100	0	19.0	19.0	0.810	0.810	2	
			20850	2510.0	0	1	0	20.0	19.9	0.897	0.918	2	
			20850	2510.0	0	50	0	19.0	19.0	0.675	0.675	2	
			21100	2535.0	0	1	0	20.0	19.7	0.960	1.029	2	
			21100	2535.0	0	50	0	19.0	18.8	0.812	0.850		
			Off	QPSK	Edge1	21350	2560.0	9	1	0	24.0	23.4	0.170
21350	2560.0	9				50	0	23.0	22.4	0.149	0.171	1	
Edge 3	21350	2560.0			9	1	0	24.0	23.4	0.090	0.103	1	
	21350	2560.0			9	50	0	23.0	22.4	0.048	0.055	1	
Edge4	21350	2560.0			9	1	0	24.0	23.4	0.515	0.591	1	
	21350	2560.0			9	50	0	23.0	22.4	0.339	0.389	1	
Rear	21350	2560.0			9	1	0	24.0	23.4	0.434	0.498	1	
	21350	2560.0			9	50	0	23.0	22.4	0.359	0.412	1	

Note(s):

- When the reported SAR is  $\leq 0.8$  W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. (Per KDB 941225 D05 v02r05)
- The highest reported SAR for 1 RB and 50% RB allocation are  $\geq 0.8$  W/kg, SAR is required of 100% RB. Testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation  $< 1.45$  W/kg. (Per KDB 941225 D05 v02r05)
- Repeated measurements are required only when the measured SAR is  $\geq 0.80$  W/kg. If the measured SAR values are  $< 1.45$  W/kg with  $\leq 20\%$  variation, only one repeated measurement is required to reaffirm that the results are not expected to have substantial variations, which may introduce significant compliance concerns. (Per KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04)
  - Original SAR = 1.180 W/kg, therefore two times repeat SAR is required.
  - Repeat SAR = 1.200 W/kg  $< 1.45$ W/kg
  - SAR variation= -1.69 %  $< 20\%$

**LTE Band 13 (10MHz Bandwidth):**

Power back off (On/Off)	Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	UL RB Allocation	UL RB Start	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note	Plot.
								Tune up limit	Measured				
On	QPSK	Edge1	23230	782.0	0	1	0	24.0	23.4	0.205	0.235	1	
			23230	782.0	0	25	0	23.0	22.5	0.182	0.204	1	
		Edge3	23230	782.0	0	1	0	24.0	23.4	0.046	0.053	1	
			23230	782.0	0	25	0	23.0	22.5	0.034	0.038	1	
		Edge4	23230	782.0	0	1	0	24.0	23.4	0.378	0.434	1	
			23230	782.0	0	25	0	23.0	22.5	0.352	0.395	1	
		Rear	23230	782.0	0	1	0	24.0	23.4	1.020	1.171		10
			23230	782.0	0	1	24	24.0	23.2	0.917	1.102	2	
			23230	782.0	0	1	49	24.0	23.1	0.877	1.079	2	
			23230	782.0	0	25	0	23.0	22.5	0.851	0.955		
			23230	782.0	0	25	12	23.0	22.2	0.843	1.014	2	
			23230	782.0	0	25	24	23.0	22.1	0.842	1.036	2	
			23230	782.0	0	50	0	23.0	22.4	0.856	0.983	2	
		23230	782.0	0	1	0	24.0	23.4	1.010	1.160	3		

**Note(s):**

1. When the reported SAR is  $\leq 0.8$  W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. (Per KDB 941225 D05 v02r05)
2. The highest reported SAR for 1 RB and 50% RB allocation are  $\geq 0.8$  W/kg, SAR is required of 100% RB. Testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation  $< 1.45$  W/kg. (Per KDB 941225 D05 v02r05)
3. Repeated measurements are required only when the measured SAR is  $\geq 0.80$  W/kg. If the measured SAR values are  $< 1.45$  W/kg with  $\leq 20\%$  variation, only one repeated measurement is required to reaffirm that the results are not expected to have substantial variations, which may introduce significant compliance concerns. (Per KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04)
  - 3.1 Original SAR = 1.02 W/kg, therefore two times repeat SAR is required.
  - 3.2 Repeat SAR = 1.01 W/kg  $< 1.45$ W/kg
  - 3.3 SAR variation= 0.98 %  $< 20\%$

**LTE Band 17 (10MHz Bandwidth):**

Power back off (On/Off)	Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	UL RB Allocation	UL RB Start	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note	Plot.
								Tune up limit	Measured				
On	QPSK	Edge1	23780	709.0	0	1	0	24.0	23.8	0.048	0.050	1	
			23780	709.0	0	25	0	23.0	22.8	0.040	0.042	1	
		Edge3	23780	709.0	0	1	0	24.0	23.8	0.040	0.042	1	
			23780	709.0	0	25	0	23.0	22.8	0.023	0.024	1	
		Edge4	23780	709.0	0	1	0	24.0	23.8	0.177	0.185	1	
			23780	709.0	0	25	0	23.0	22.8	0.146	0.153	1	
		Rear	23780	709.0	0	1	0	24.0	23.8	0.326	0.341	1	
			23780	709.0	0	25	0	23.0	22.8	0.364	0.381	1	
			23790	708.0	0	1	0	24.0	23.5	0.326	0.366		
			23800	710.0	0	1	0	24.0	23.6	0.369	0.405		11

**Note(s):**

1. When the reported SAR is  $\leq 0.8$  W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. (Per KDB 941225 D05 v02r05)
2. The highest reported SAR for 1 RB and 50% RB allocation are  $\geq 0.8$  W/kg, SAR is required of 100% RB. Testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation  $< 1.45$  W/kg. (Per KDB 941225 D05 v02r05)

**Wi-Fi (2.4GHz Band):**

Test Mode	Band (GHz)	Mode	Dist. (mm)	Test Position	Ch#	Freq. (MHz)	Chain	Power (dBm)		Area Scan 1g SAR (W/Kg)	Zoom Scan 1g SAR (W/kg)	Reported SAR (W/kg)	Note	Plot No.
								Tune up limit	Meas.					
Tablet	2.4GHz	802.11b	0	Edge 1	11	2462	Main	16.5	15.9	0.366	0.354	0.406		
			0	Rear	11	2462	Main	16.5	15.9	0.575	0.588	0.675		12

**Bluetooth:**

Band (GHz)	Mode	Dist. (mm)	Test Position	Ch#	Freq. (MHz)	Chain	Power (dBm)		Area Scan 1g SAR (W/Kg)	Zoom Scan 1g SAR (W/kg)	Reported SAR (W/kg)	Note	Plot No.
							Tune up limit	Meas.					
Bluetooth	BLE	0	Edge 1	39	2480	1	9.0	7.4	0.075	0.080	0.116		
			Rear	39	2480	1	9.0	7.4	0.185	0.145	0.210		13



## 17 Simultaneous Transmission SAR Analysis

### 17.1 Sum of the SAR for Simultaneous Transmission Analysis

#### 17.1.1 Sum of the SAR for WLAN & WWAN

##### GPRS 850+2.4G Band

Test Position	Simultaneous Transmission Scenario			1+2 Summed 1g SAR(W/kg)	1+3 Summed 1g SAR(W/kg)	SPLSR (Yes/No)
	1	2	3			
	GPRS 850	Wi-Fi Main 2.4 GHz Band	Bluetooth			
Rear	0.422	0.675	0.210	1.097	0.632	No
Edge 1	0.367	0.406	0.116	0.773	0.522	No

**Note(s):**

As the Sum of the SAR is less than 1.6W/Kg, so SPLSR is not required.

##### GPRS 1900+2.4G Band

Test Position	Simultaneous Transmission Scenario			1+2 Summed 1g SAR(W/kg)	1+3 Summed 1g SAR(W/kg)	SPLSR (Yes/No)
	1	2	3			
	GPRS 1900	Wi-Fi Main 2.4 GHz Band	Bluetooth			
Rear	0.636	0.675	0.210	1.311	0.846	No
Edge 1	0.257	0.406	0.116	0.663	0.522	No

**Note(s):**

As the Sum of the SAR is less than 1.6W/Kg, so SPLSR is not required.

##### WCDMA Band II+2.4G Band

Test Position	Simultaneous Transmission Scenario			1+2 Summed 1g SAR(W/kg)	1+3 Summed 1g SAR(W/kg)	SPLSR (Yes/No)
	1	2	3			
	WCDMA Band II	Wi-Fi Main 2.4 GHz Band	Bluetooth			
Rear	1.228	0.675	0.210	1.903	1.438	Yes
Edge 1	0.331	0.406	0.116	0.737	0.522	No

**Note(s):**

As the Sum of the SAR is greater than 1.6W/Kg, so SPLSR is required.

##### WCDMA Band IV+2.4G Band

Test Position	Simultaneous Transmission Scenario			1+2 Summed 1g SAR(W/kg)	1+3 Summed 1g SAR(W/kg)	SPLSR (Yes/No)
	1	2	3			
	WCDMA Band IV	Wi-Fi Main 2.4 GHz Band	Bluetooth			
Rear	1.150	0.675	0.210	1.825	1.360	Yes
Edge 1	0.340	0.406	0.116	0.746	0.522	No

**Note(s):**

As the Sum of the SAR is greater than 1.6W/Kg, so SPLSR is required.

WCDMA Band V +2.4G Band

Test Position	Simultaneous Transmission Scenario			1+2 Summed 1g SAR(W/kg)	1+3 Summed 1g SAR(W/kg)	SPLSR (Yes/No)
	1	2	3			
	WCDMA Band V	Wi-Fi Main 2.4 GHz Band	Bluetooth			
Rear	1.021	0.675	0.210	1.696	1.231	Yes
Edge 1	0.615	0.406	0.116	1.021	0.522	No

Note(s):

As the Sum of the SAR is greater than 1.6W/Kg, so SPLSR is required.

LTE Band 2 +2.4G Band

Test Position	Simultaneous Transmission Scenario			1+2 Summed 1g SAR(W/kg)	1+3 Summed 1g SAR(W/kg)	SPLSR (Yes/No)
	1	2	3			
	LTE Band 2	Wi-Fi Main 2.4 GHz Band	Bluetooth			
Rear	1.240	0.675	0.210	1.915	1.450	Yes
Edge 1	0.353	0.406	0.116	0.759	0.522	No

Note(s):

As the Sum of the SAR is greater than 1.6W/Kg, so SPLSR is required.

LTE Band 4 +2.4G Band

Test Position	Simultaneous Transmission Scenario			1+2 Summed 1g SAR(W/kg)	1+3 Summed 1g SAR(W/kg)	SPLSR (Yes/No)
	1	2	3			
	LTE Band 4	Wi-Fi Main 2.4 GHz Band	Bluetooth			
Rear	1.260	0.675	0.210	1.935	1.470	Yes
Edge 1	0.477	0.406	0.116	0.883	0.522	No

Note(s):

As the Sum of the SAR is greater than 1.6W/Kg, so SPLSR is required.

LTE Band 5 +2.4G Band

Test Position	Simultaneous Transmission Scenario			1+2 Summed 1g SAR(W/kg)	1+3 Summed 1g SAR(W/kg)	SPLSR (Yes/No)
	1	2	3			
	LTE Band 5	Wi-Fi Main 2.4 GHz Band	Bluetooth			
Rear	1.063	0.675	0.210	1.738	1.273	Yes
Edge 1	0.617	0.406	0.116	1.023	0.522	No

Note(s):

As the Sum of the SAR is greater than 1.6W/Kg, so SPLSR is required.

**LTE Band 7 +2.4G Band**

Test Position	Simultaneous Transmission Scenario			1+2 Summed 1g SAR(W/kg)	1+3 Summed 1g SAR(W/kg)	SPLSR (Yes/No)
	1	2	3			
	LTE Band 7	Wi-Fi Main 2.4 GHz Band	Bluetooth			
Rear	1.200	0.675	0.210	<b>1.875</b>	1.410	Yes
Edge 1	0.559	0.406	0.116	0.965	0.522	No

**Note(s):**

As the Sum of the SAR is greater than 1.6W/Kg, so SPLSR is required.

**LTE Band 13 +2.4G Band**

Test Position	Simultaneous Transmission Scenario			1+2 Summed 1g SAR(W/kg)	1+3 Summed 1g SAR(W/kg)	SPLSR (Yes/No)
	1	2	3			
	LTE Band 13	Wi-Fi Main 2.4 GHz Band	Bluetooth			
Rear	1.171	0.675	0.210	<b>1.846</b>	1.381	Yes
Edge 1	0.235	0.406	0.116	0.641	0.522	No

**Note(s):**

As the Sum of the SAR is greater than 1.6W/Kg, so SPLSR is required.

**LTE Band 17 +2.4G Band**

Test Position	Simultaneous Transmission Scenario			1+2 Summed 1g SAR(W/kg)	1+3 Summed 1g SAR(W/kg)	SPLSR (Yes/No)
	1	2	3			
	LTE Band 17	Wi-Fi Main 2.4 GHz Band	Bluetooth			
Rear	0.405	0.675	0.210	1.080	0.615	No
Edge 1	0.050	0.406	0.116	0.456	0.522	No

**Note(s):**

As the Sum of the SAR is less than 1.6W/Kg, so SPLSR is not required.

**17.1.2 Sum of the 1g SAR for Body Exposure Condition**

**WCDMA Band II + 2.4GHz Band**

Test Position	Simultaneous Transmission Scenario		Σ 1-g SAR (W/kg)	Calculated distance (cm)	SPLSR	Figure
	WCDMA Band II	Wi-Fi Main 2.4 GHz Band				
Rear	1.228	0.675	1.903	14.34	0.02	1

Note(s):

The SPLSR is rounded to two decimal digits and  $\leq 0.04$

**WCDMA Band IV + 2.4GHz Band**

Test Position	Simultaneous Transmission Scenario		Σ 1-g SAR (W/kg)	Calculated distance (cm)	SPLSR	Figure
	WCDMA Band IV	Wi-Fi Main 2.4 GHz Band				
Rear	1.150	0.675	1.825	14.35	0.02	2

Note(s):

The SPLSR is rounded to two decimal digits and  $\leq 0.04$

**WCDMA Band V + 2.4GHz Band**

Test Position	Simultaneous Transmission Scenario		Σ 1-g SAR (W/kg)	Calculated distance (cm)	SPLSR	Figure
	WCDMA Band V	Wi-Fi Main 2.4 GHz Band				
Rear	1.021	0.675	1.696	13.72	0.02	3

Note(s):

The SPLSR is rounded to two decimal digits and  $\leq 0.04$

**LTE Band 2 + 2.4GHz Band**

Test Position	Simultaneous Transmission Scenario		Σ 1-g SAR (W/kg)	Calculated distance (cm)	SPLSR	Figure
	LTE Band 2	Wi-Fi Main 2.4 GHz Band				
Rear	1.240	0.675	1.915	13.87	0.02	4

Note(s):

The SPLSR is rounded to two decimal digits and  $\leq 0.04$

**LTE Band 4 + 2.4GHz Band**

Test Position	Simultaneous Transmission Scenario		Σ 1-g SAR (W/kg)	Calculated distance (cm)	SPLSR	Figure
	LTE Band 4	Wi-Fi Main 2.4 GHz Band				
Rear	1.260	0.675	1.935	14.72	0.02	5

Note(s):

The SPLSR is rounded to two decimal digits and  $\leq 0.04$

**LTE Band 5 + 2.4GHz Band**

Test Position	Simultaneous Transmission Scenario		Σ 1-g SAR (W/kg)	Calculated distance (cm)	SPLSR	Figure
	LTE Band 5	Wi-Fi Main 2.4 GHz Band				
Rear	1.063	0.675	1.738	13.63	0.02	6

Note(s):

The SPLSR is rounded to two decimal digits and  $\leq 0.04$

**LTE Band 7 + 2.4GHz Band**

Test Position	Simultaneous Transmission Scenario		$\Sigma$ 1-g SAR (W/kg)	Calculated distance (cm)	SPLSR	Figure
	LTE Band 7	Wi-Fi Main 2.4 GHz Band				
Rear	1.200	0.675	1.875	15.22	0.02	7

**Note(s):**

The SPLSR is rounded to two decimal digits and  $\leq 0.04$

**LTE Band 13 + 2.4GHz Band**

Test Position	Simultaneous Transmission Scenario		$\Sigma$ 1-g SAR (W/kg)	Calculated distance (cm)	SPLSR	Figure
	LTE Band 13	Wi-Fi Main 2.4 GHz Band				
Rear	1.171	0.675	1.846	13.63	0.02	8

**Note(s):**

The SPLSR is rounded to two decimal digits and  $\leq 0.04$

## 18 Equipment List & Calibration Status

Name of Equipment	Manufacturer	Type/Model	Serial Number	Calibration Cycle(year)	Calibration Due
Wireless Communication Test Set	Agilent	E5515C 8960	MY48361017	1	2017/08/31
Radio Communication Analyzer	Anritsu	MT8820C	620093800	1	2017/07/25
Wideband Radio communication Tester	R&S	CMW 500	116875	1	2018/04/24
S-Parameter Network Analyzer	Agilent	E5071C	MY46107234	1	2017/10/18
Electronic Probe kit	Hewlett Packard	85070D	N/A	N/A	N/A
Power Meter	Agilent	4416	GB41291611	1	2017/08/30
Power Sensor	Agilent	8481H	MY41091956	1	2017/08/30
Data Acquisition Electronics (DAE)	SPEAG	DAE4	877	1	2018/03/19
Data Acquisition Electronics (DAE)	SPEAG	DAE4	917	1	2018/01/05
Dosimetric E-Field Probe	SPEAG	EX3DV4	3665	1	2017/05/25
750 MHz System Validation Dipole	SPEAG	D750V3	1020	1	2018/01/17
835 MHz System Validation Dipole	SPEAG	D835V2	4d015	1	2018/03/20
1750 MHz System Validation Dipole	SPEAG	D1750V2	1158	1	2017/10/06
1900 MHz System Validation Dipole	SPEAG	D1900V2	5d056	1	2018/02/16
2450 MHz System Validation Dipole	SPEAG	D2450V2	728	1	2017/05/23
Robot	Staubli	RX90L	F02/5T69A1/A/01	N/A	N/A
Amplifier	Mini-Circuit	ZVE-8G	665500309	N/A	N/A
Amplifier	Mini-Circuit	ZHL-1724HLN	D072602#2	N/A	N/A
Thermometer	Comet	53120	12932714	1	2018/2/23

## 19 Facilities

All measurement facilities used to collect the measurement data are located at

- No. 81-1, Lane 210, Bade Rd. 2, Luchu Hsiang, Taoyuan Hsien, Taiwan, R.O.C.
- No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)
- No. 199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.

## 20 Reference

- [1] Federal Communications Commission, \Report and order: Guidelines for evaluating the environmental effects of radiofrequency radiation", Tech. Rep. FCC 96-326, FCC, Washington, D.C. 20554, 1996.
- [2] David L. Means Kwok Chan, Robert F. Cleveland, \Evaluating compliance with FCC guidelines for human exposure to radiofrequency electromagnetic fields", Tech. Rep., Federal Communication Commission, Office of Engineering & Technology, Washington, DC, 1997.
- [3] Thomas Schmid, Oliver Egger, and Niels Kuster, \Automated E-field scanning system for dosimetric assessments", IEEE Transactions on Microwave Theory and Techniques, vol. 44, pp. 105{113, Jan. 1996.
- [4] Niels Kuster, Ralph Kastle, and Thomas Schmid, \Dosimetric evaluation of mobile communications equipment with known precision", IEEE Transactions on Communications, vol. E80-B, no. 5, pp. 645{652, May 1997.
- [5] CENELEC, \Considerations for evaluating of human exposure to electromagnetic fields (EMFs) from mobile telecommunication equipment (MTE) in the frequency range 30MHz - 6GHz", Tech. Rep., CENELEC, European Committee for Electrotechnical Standardization, Brussels, 1997.
- [6] ANSI, ANSI/IEEE C95.1-2005: IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz, The Institute of Electrical and Electronics Engineers, Inc., New York, NY 10017, 2005.
- [7] Katja Pokovic, Thomas Schmid, and Niels Kuster, \Robust setup for precise calibration of E-field probes in tissue simulating liquids at mobile communications frequencies", in ICECOM '97, Dubrovnik, October 15{17, 1997, pp. 120{124.
- [8] Katja Pokovic, Thomas Schmid, and Niels Kuster, \E-field probe with improved isotropy in brain simulating liquids", in Proceedings of the ELMAR, Zadar, Croatia, 23{25 June, 1996, pp. 172{175.
- [9] Volker Hombach, Klaus Meier, Michael Burkhardt, Eberhard Kuhn, and Niels Kuster, \The dependence of EM energy absorption upon human head modeling at 900 MHz", IEEE Transactions on Microwave Theory and Techniques, vol. 44, no. 10, pp. 1865{1873, Oct. 1996.
- [10] Klaus Meier, Ralf Kastle, Volker Hombach, Roger Tay, and Niels Kuster, \The dependence of EM energy absorption upon human head modeling at 1800 MHz", IEEE Transactions on Microwave Theory and Techniques, Oct. 1997, in press.
- [11] W. Gander, Computermathematik, Birkhaeuser, Basel, 1992.
- [12] W. H. Press, S. A. Teukolsky, W. T. Vetterling, and B. P. Flannery, Numerical Recipes in C, The Art of Scientific Computing, Second Edition, Cambridge University Press, 1992. Dosimetric Evaluation of Sample device, month 1998 9
- [13] NIS81 NAMAS, \The treatment of uncertainty in EMC measurement", Tech. Rep., NAMAS Executive, National Physical Laboratory, Teddington, Middlesex, England, 1994.
- [14] Barry N. Taylor and Christ E. Kuyatt, \Guidelines for evaluating and expressing the uncertainty of NIST measurement results", Tech. Rep., National Institute of Standards and Technology, 1994. Dosimetric Evaluation of Sample device, month 1998 10

## 21 Attachments

Exhibit	Content
1	System Performance Check Plots
2	SAR Test Data Plots
3	SPLSR Plots
4	Calibration Data Report
5	T170328D17-SF PHOTOS

**END OF REPORT**